MEETING

STATE OF CALIFORNIA

DEPARTMENT OF TOXIC SUBSTANCES CONTROL

GREEN RIBBON SCIENCE PANEL

CAL/EPA HEADQUARTERS BUILDING

KLAMATH ROOM, SECOND FLOOR

1001 I STREET

SACRAMENTO, CALIFORNIA

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9:00 A.M.

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APPEARANCES

DIRECTOR

Barbara Lee

CO-CHAIRS

Art Fong, Apple Inc.

Kelly Moran, TDC Environmental

MODERATORS

Marcus Simpson

Meredith Williams

PANEL

Jack Linard, Unilever

Ken Geiser, University of Massachusetts, Professor Emeritus

Elaine Cohen Hubel, USEPA, Office of Research and Development

Helen Holder, Hewlett-Packard

Mike Caringello, SC Johnson

Mark Nicas, University of California, Berkeley

Rebecca Sutton, San Francisco Estuary Institute

Julie Schoenung, UC Irvine, Professor

Ann Blake, Environmental and Public Health Consulting

STAFF

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APPEARANCES

PRESENTERS

Karl Palmer, Department of Toxic Substances Control, Safer Consumer Product Program, Branch Chief

Tony Luan, Supervising Hazardous Substances Engineer I

Xiaoying Zhou, Senior Hazardous Substances Engineer

PUBLIC COMMENT

Tom Jacob, Chemical Industry Council of California

AGENDA

P R O C E E D I N G S

9:02 A.M.

MR. SIMPSON: Okay, ladies and gentlemen. We're going to get underway here. If you have not had the opportunity to sign in, please take a moment to sign in at the sign in sheets at the back. You will also see that we have comment cards and agendas. Please pick one up, and we're going to get underway.

So, my name is Mark Simpson, and I work in DTSC's office of Public Participation. On behalf of the Department, I'd like to say thank you and welcome to everyone for taking the time to be here today.

I want to start off here with a quick announcement, that in addition to those of us in the room here today in person, we are also webcasting today's Green Ribbon Science Panel discussion. If you are tuning in via webcast and would like to provide input today, please email your questions and comments to saferconsumerproducts@DTSC.ca.gov. And, as you can see, we have it up here on the screen, too, for your reference, as well.

Could you back up one slide?

And all meeting materials that apply to today can be found at the link there, as well, for those of you that like to login via your smart devices and your laptops here in the room.

Today's meeting is also being recorded, and transcripts will be made available and posted to DTSC's public website once they're ready.

So just a couple of brief announcements. Please take a moment to look around the room, just in the event, which we all hope is not the case, that we do need to evacuate the room, we've got exits to the left, right over here, in the back, and then the double doors right there.

So in case we do need to leave the room quickly, our staff will be helping to guide people out. We'd ask that once you get outside, please do not use the elevators. Should we need to leave the room quickly, please head for the stairway. And if for any reason the stairways are unusable, then we will be directed to a protected vestibule inside a stairwell to get out safely. Okay? Thank you.

And a couple of really quick housekeeping details. The nearest restrooms are located just

in the main hallway outside the doors. So the men's room is located to the left of the hallway, down at the east. And then off to the right towards the west end of the hallway is the women's restroom.

Yes, Ms. Williams?

DR. WILLIAMS: So I just wanted to let people know, a couple of the bathroom stalls in the women's room are out of service.

MR. SIMPSON: Oh. Okay.

DR. WILLIAMS: And so there is another bathroom on this floor. And if we get backed up, we'll make sure that staff can show you where that is. It's kind of a little bit of a maze to get there but --

MR. SIMPSON: Thank you for the update.

DR. WILLIAMS: -- just wanted to let you know.

MR. SIMPSON: Much appreciated. Thank you.

And in a pinch, as well, just right across the breezeway bridge, there's another set of restrooms on the second floor, close to the Byron Sher Auditorium, so --

DR. WILLIAMS: Just past it.

MR. SIMPSON: Yes. Absolutely. We've got plenty of options for folks, so, absolutely.

So -- and, as you guys see, we have refreshments here towards the side of the room, some light-weight fruit snacks, and then also some water and coffee, so please make yourself at home and get caffeinated.

So -- and I'd like to let folks know, the Panel concluded that today's meeting to the Bagley-Keene Open Meeting Act. Our Department definitely wants to preserve the public transparency of the Panel's discussion.

So finally, with respect to the comment cards, for those of you that plan to possibly make a comment or if you're sure you would like to make a comment, you will notice that the comment cards have a segment that asks, would you like us to read your comment for you or would you like to read the comment on your own. Later in the morning when we do have the comment period, it would be super helpful to us if you guys can fill them out as legibly as possible and take the time to indicate if you'd like to read your own comment or if you would like us to read it for you into the record.

So thank you.

Kenneth is going to be helping out when the time comes. He's there in the rear of the room. He's got the blue shirt. He'll be gathering comment cards. And for those of you that would like your comment read into the record, I will be reading them into the record, if you'd like.

So thank you. And with that said, I really appreciate you guys tuning into this brief introduction.

I'd like to turn it over to DTSC's Director, Ms. Barbara Lee. Thank you.

DIRECTOR LEE: Thank you, Marcus.

I'd also like to give a thank you to our Co-Chairs, Kelly Moran and Art Fong, for their continued dedication to the Green Ribbon Science Panel. I know we ask an awful lot of you in terms of time commitment at -- in your very busy lives. And I extend that to all of the Green Ribbon Science Panel Members. This is not a just-for-show panel. This is a Panel that we actively use and we do need your input, and it absolutely does make the work that we do stronger and more effective. And so I'm very grateful to all of

you.

I know some of you traveled quite some distance to be here. And I would imagine those of you coming from the Midwest and the Eastern Seaboard are appreciating, perhaps, the change in weather. But notwithstanding, traveling this time of year is very difficult, so I'm grateful to all of you for your continued dedication to this effort.

I'm sure it hasn't been lost on you that our Safer Consumer Products Program has been picking up the pace a bit lately. You've all, hopefully, seen that our draft Work Plan is now on our website, and I know you're going to be talking about that later today. There's been -- there will be some other packages, I hope you'll be seeing soon. Dr. Williams and her staff have been really busy lately. And this is what all of us have been hoping for from this program. They're hitting their stride and I think good things are going to happen, with your support and help.

Without getting too much into politics, I will say that we're very much aware here at DTSC that there have been some changes at the national

level in direction, especially with USEPA's programs. And some of those changes, I think for us, have signaled that it's time to really step up, not step back, and that's what we're doing.

The work that we've done so far on the methylene chloride package and on the spray polyurethane foam package, these are things that are much more necessary now in light of federal directions. And the work that this team is doing to leverage groundwork that was laid at the federal level and efforts across the country and around the world, I think is a key component of our success. Kelly Moran spoke to me about that just before the meeting and it definitely aligns with my view of what the Safer Consumer Products Program is about and what we need it to be.

So you will see us picking us picking up the pace, as I said. You will see us taking on some big challenges and really exploring how best to deploy the resources we have in a precautionary way to achieve the best benefit that we can for the people of California, but also as a flagship for those across our country and around the world.

So I appreciate all of you coming today.

I know you've got a very packed agenda. And I think it's going to be a good meeting.

DR. WILLIAMS: Thank you, Barbara. And we appreciate your making time to come. I know your schedule is packed today, but we'll take you for the minutes that we have you. It's really nice to have you here.

And thanks to our Co-Chairs for helping shape this meeting and get us all here today and ready to do some really exciting work.

And, of course, thank you to the Panel. We ask a lot of you, and not just the travel, but what we're asking you to think about and discuss at this meeting is ambitious. And I think that ambition reflects where we are with the program.

Karl Palmer is the king of the metaphor. And many of you who have known him for a long time might know that. And I know that some of you attended the Independent Review Panel last year and heard us talk about one of Karl's favorite metaphors, which is be a steelhead, not a salmon. And for those of you who don't know, salmon go up the river, they spawn, they die. Steelhead go up the river, they spawn, they go back. They do it multiple times; they do it

repeatedly.

So one of our program expressions is be a steelhead, not a salmon. And that's all about knowing that the things that we're doing, we're going to have to do over and over again and to learn every step of the way, so that we can do things better and repeat them over time.

And just to carry that metaphor a bit further, I think about healthy stream ecosystems, and they require a lot of things. They require good freshwater flow. They require healthy distribution of gravels. They need a level of complexity in the vegetation, and so on and so on. I could go on because that's one of my happy spaces.

But just as with that, I think this program needs a lot in terms of making it work. We need to have good communication. We need the engagement of a wide range of stakeholders. We need to have technical expertise in a wide variety of skills. And I consider the Panel to be a big part of that ecosystem and really has helped shape in the sense that, you know, sometimes we shape the landscape, I think this Panel does definitely shape the landscape.

The program is maturing and it is -- for a number of years, I've been saying everything we're doing we're doing for the first time, and that means it takes us some time and we have to figure some things out. Well, guess what? We've now released our second draft Work Plan, so it's not the first time anymore. And very soon we'll be talking about the next products that we're going to be considering and, again, not the first time. And we've learned a lot in addressing the first three products. And it's maturing.

The program is maturing, along with the Department, under Barbara's leadership in a number of ways. We're in the middle of a strategic planning process led by Director Lee and her Deputy Director, Francesca Negri, and it's really going to set a new direction for the -- not necessarily a new radical direction for the Department, but really looking deeply about what kind of culture we want, what we can do to improve, what we've learned over the past several years under your leadership to continue to build the Department, which obviously trickles down to the program.

Within the program, in terms of

maturation, we've developed some very robust processes. We've been through a Lean Six Sigma effort to look at how we research and prioritize products. We're beginning to implement some of the findings of that Lean Six Sigma effort.

And then in terms of the technical depth and breadth of the program, there is a tremendous growth in skills. Most recently we were very fortunate to hire a new Exposure Scientist, Dr. Qingyu Meng (phonetic) from Rutgers University, and we're thrilled to have him. But he is one of some -- many great hires that we've been fortunate to bring onboard. And so I do feel like the program is, again, mature enough to be able to strong and strong enough to keep doing it over and over again.

We are a school of fish and you are part of that school. We do things together. And I beat this metaphor enough, but I will just say that I'm really looking forward to being in some deep pools over the next days, and then maybe finding a little refugia, a few, finding a couple moments to really enjoy catching up with all of you and doing the work of the next few days.

So with that, I'll turn it over to Art

and Kelly.

CO-CHAIR FONG: Thank you, Dr. Williams.

You guys probably don't know this, but I did -- one of my post-doc research project is using the rainbow trout. And I'm totally confused about this salmon and steelhead metaphor, but doesn't really matter for this meeting.

What I want to do is actually, again, also extend my welcome to the Panel Members. I know all of you have been sitting on other panels where it's just kind of like a talking head window dressing. That's definitely not the case with my experience with this Panel. I mean, you guys roll up your sleeves and you guys do really amazing technical work, so thank you very much. I really appreciate your efforts.

In addition to that, I want to point out and highlight the really impressive work that DTSC staff has been doing. Besides making me do -- you know, looking over their work, just volumes and volumes of it, I mean, the dedication and the commitment and the quality of the work is just amazing. I'm just so impressed, Meredith.

And so let me turn the mic over to my Co-

Chair Kelly, so she can extend her welcomes.

CO-CHAIR MORAN: And I just want to join Art and all our leaders here from the Department in welcoming all of you and thanking you for your service.

I also wanted to bring us back around to why we're here. We are -- we created -- this Green Ribbon Science Panel was created by the legislation that established the Safer Consumer Products Regulatory Program. And the legislation specifies some roles for us, and we're going to be covering a lot of those roles today.

So just as a quick reminder, we are -- our job is to advise the Department on the scientific and technical matters in support of the goals of this article, which is significantly reducing adverse health and safety and environmental impacts of chemicals used in commerce, so -- as well as the overall costs of those impacts to the state's society. And specifically, the goal of this whole program is to encourage the redesign of consumer products, manufacturing processes and approaches. I mean, we know that. That's very fundamental.

It's our job to assist the Department in

developing green chemistry and chemicals' policy recommendation, and implementation strategies and details, so we're going to talk a lot about implementation today, and to ensure those recommendations are based on a strong scientific foundation. So we're bringing our broad scientific experience, all our professional experience, in helping them make sure that what they're doing is robust scientifically. So we've done a lot of supporting what they're doing, but it is our job to also, both big picture and small picture, help make sure that, you know, they've had that peer review and quality assurance.

It's our job to advise the Department and make recommendations for chemicals the Panel views as priorities for which the hazard trades and toxicological endpoint data should be collected, so we're talking about the Work Plan today. And on the table is what's not it the Work Plan, as well as what's in the Work Plan, so that's also something to think about.

We have already advised the Department on the adoption of regulations, so that's behind us, but that's in there.

And then we can advise the Department on

any other pertinent matter in implementing this article as determined by the Department. So they've asked us to come in and advise them on some specific things, and they do that every meeting.

So this is a very broad charge that's given to us by the legislature. And I've seen over the time that the Panel has existed and in the requests we've gotten from the legislature that they do expect us to play that scientific advisory and support role, but also look over their shoulders a little bit and make sure that this program is actually grounded in good scientific and good practical basis.

So that's where our charge is today and tomorrow and into the future. So just as a reminder, think about that. So as we move forward in our discussion, think big picture and think small picture. Is this going right? Is there some course correction that needs to be made? And where can we help the Department think big, as well as make sure it's all right on the ground too?

So thank you.

CO-CHAIR FONG: At this point, I'm going

to ask the members to introduce themselves for the record. Let's start with Jack.

MR. LINARD: Jack Linard from Unilever.

MR. GEISER: Ken Geiser, University of Massachusetts, Professor Emeritus.

MS. COHEN HUBEL: Elaine Cohen Hubel, USEPA, Office of Research and Development.

MS. HOLDER: Helen Holder, HP.

CO-CHAIR FONG: Art Fong, Apple.

CO-CHAIR MORAN: Kelly Moran, TDC Environmental.

MR. CARINGELLO: Mike Caringello, SC Johnson.

MR. NICAS: Mark Nicas, University of California, Berkeley, (indiscernible) Professor.

MS. SUTTON: Rebecca Sutton, San Francisco Estuary Institute.

MS. SCHOENUNG: Julie Schoenung, Professor at UC Irvine.

CO-CHAIR MORAN: And temporarily indisposed, Ann Blake, but she'll be returning.

CO-CHAIR FONG: So today we will start the meeting by getting a program update and presentation from Karl Palmer, followed by any clarifying questions that the Panel Members may

have. After presentation, and then the question and answer period, we'll hear from Tony and Xiaoying on the work that the AA Team is doing, as well as their evaluation of the example alternative assessments.

Again, after the clarifying questions, we will have a break, to be followed by a public comment period. For the rest of the morning and today, this afternoon, the Panel will discuss DTSC's evaluation of the example alternative assessments.

And at this point, Karl is going to be giving us an update on the program.

CO-CHAIR MORAN: And just one last thing, these portable mikes are awesome. I want to thank the Cal/EPA Facilities Team and everyone who was involved in getting them for us. When they're green, they're on. When they're red, they're off. And to keep the shuffling papers from interfering with the presentation, I'm going to suggest that we keep them on red when we're not talking.

MR. PALMER: Okay. Thank you. Good morning. I'm Karl Palmer. I'm the Branch Chief for the Safer Consumer Products Program. Welcome

all you salmon. I'm going to give a brief update of some of the activities that we've been up to and things coming down the river, if you will, and so we'll just dive right in. Okay. I'm not going to use any more metaphors.

Okay, a brief reminder that pretty much almost everything we do is framed by our regulations which outline the requirements of the program. And just briefly, we identify candidate chemicals for consideration based on their hazard properties and their presence in the environment or people. We select products that contain one or more of those chemicals to focus on that product to put it in our system. We then ask the manufacturers of those products to do an alternative analysis, looking for a safer way to make and produce that product. And then, if necessary, we implement a regulatory response at that point.

So just briefly, we continuously monitor all of the lists on our candidate chemical list add we update the database quarterly. We updated it at the end of December. There were a few chemicals added, nothing earth shattering that I can think of. But you can go on our CalSAFER

portal and do a search of those chemicals. We've been looking at the party product pipeline (phonetic), so we've been proposing regulations to adopt in regulation party products in list form. And we've been implementing our 2015-2017 Work Plan, and we're going to talk more about that.

We've been actively, as you'll hear later today, developing tools and working on training and adding information to the queue, if you will, for people who are going to conduct alternatives' analyses. And we haven't done anything with regulatory responses yet because we're not there yet.

So first, last summer, our first priority product adopted was children's foam-padded sleep products with a couple of flame retardants. That was adopted in regulation. Manufacturers were required to notify us if they were producing those products with those chemicals in California. We didn't receive any notifications. We followed up with the manufacturers that we knew about and surveyed them and they -- some of them affirmed that, no, they've moved away from these flame retardants, so that's a good thing.

In the spring and summer, we'll be doing some sampling an analysis out in the marketplace just to verify that, in fact, that's the case, that those flame retardants are not in these children's products, so that's a good thing.

The second priority product, spray polyurethane foam systems with unreacted MDI, we closed the rulemaking comment period in June and we've been actively evaluating those many comments we had and moving that package forward. And we're hoping that that will be effective on July 1st of this year, which will then initiate the next priority product where manufacturers need to evaluate whether they do an alternatives analysis, and so we're looking forward to that.

The third product we're focusing on is methylene chloride in paint strippers. And I wanted to just highlight, sadly, this young man, Drew Wynne from South Carolina, died last October using methylene chloride paint stripper. And I put that up there for a couple of reasons.

One, we are actively, every day in the trenches doing scientific research, collecting information, evaluating information, and sometimes we lose sight of the importance of what

we do and the impact that these impacts may have on people. And so this was a sobering reminder because when we closed our comment period in January, we received multiple comments from this young man's family and friends saying, you know, this is real, this effects people, and we hope you'll move forward with this priority product.

So we closed the comment period. We're in the process of looking at those comments right now. If we determine we need to change the regulation, we'll come out with another comment period, otherwise we'll move forward and adopt, as the next priority product, this methylene chloride with paint strippers.

And just a note, to follow up on what Barbara said, many of you know that EPA was actively looking at this product and some other similar products, and they're sort of stepping back a little. We'll, we're not stepping back, we're moving forward, so please stay tuned.

So the other thing we've been doing is actively looking into some of the other products in our last Work Plan. And so I wanted to just highlight that this process is really about putting out this menu of categories of consumer

products that we can look at to choose from in selecting priority products.

So our basic process, which you've probably seen, is that we look at a class and a category. We have a workshop, asking questions, putting out some background information of what we think we're interested in, and then we collect more information. Then we come out with a more formal, what we call profile document, and this is a technical document supporting the rulemaking. We ask for comment, we have a workshop on that, and then we move towards rulemaking, and that's what we're continuing to do right now.

So the next one in the queue, we held a workshop a year ago on perfluoroalkyl and polyfluoroalkyl substances in carpets, rugs, upholstered furniture and their treatment and care products. And most of you are familiar with a lot of the concerns about this class of chemicals. We have been continually looking and collecting a lot of information and doing a lot of research and we'll soon be moving forward and narrowing this, and you'll see the profile that comes out and explains where we think we're going

with this. So that's been a lot of work, very interesting.

We also held a couple of workshops last year that were consistent with our focus on the aquatic environment and the things that impact the aquatic environment. At the time, we were looking at NPEs and triclosan. FDA had come out with some action limiting our concern about triclosan and some of these ingredients. And subsequently, some of the information we got from a lot of people and our research has sort of narrowed our focus to really looking at commercial detergents in this space right now. And again, we'll be coming out with a draft profile document in this space.

Also, many of you know we've been working for many years on potential impacts of chemicals in nail products, with our primary concern being the workers in those nail salons. It's a chemical-rich environment, if you will. We held a workshop that was well attended last spring. We've been collecting more information. And again, we're going to come out with another profile in this space this spring or summer.

The last potential priority part we've

been looking at closely is we were asked by the governor and the legislature to look at look at lead acid batteries because some of the problems that have been here in California with the recycling. And we similarly held a workshop in November that was quite well attended and a lot of information presented to us, and our staff have been digesting that. And we'll be moving forward to make a determination whether we want to consider lead acid batteries as a party product or not. Stay tuned on that.

So the last Work Plan, the 2015-2017 Work Plan, is coming to an end and we're transitioning to the next Work Plan, which you'll hear about more tomorrow, and so we're excited about that.

I wanted to highlight just one other thing. We also have been working this last year on crafting guidance on how to establish and the criteria for a Healthy Nail Salon Recognition Program. The legislature asked us to do this so that we could put out guidance to local governments in California, who could establish a program that would help, hopefully, spur best practices in the salon environment, give nail salons that do that some benefits in the

marketplace. So we're just about ready to release that document. We've had a lot of the collaboration from the California Healthy Nail Salon Collaborative.

And the programs that already have established programs, San Francisco, Santa Monica, some other Bay Areas, King County, Washington, Boston, so that's coming out. And as soon as that comes out, we'll be shifting our emphasis, our tribal -- our Environmental Justice and Tribal Affairs Office will be doing outreach and education efforts with local California local governments to help them see if they can start a recognition program, so we're really looking forward to that.

Alternatives analysis, we've been doing a lot of work on AAs. You'll hear about that later this morning. I'm not going to spend any time on that, but I think that we're looking forward to that discussion.

I wanted to highlight, many of you are familiar with our CalSAFER portal. It's a great opportunity for us to efficiently capture comments on our rulemaking, comments on our draft documents, for you to search the candidate

chemical list, et cetera. We're doing a lot of work on the backend of this, trying to continuously improve this tool. And so one of the things we're working on, for example, is making the search function better for all of you out there, and so that will continue this year.

And then lastly, I wanted to highlight just as sort of a pitch, we spent a lot of time trying to get out in the world and talk to fellow scientists and business industry and academic folks and find out what's going on and stay current. And we're really excited that this November the Society for Environmental Toxicology and Chemistry will be holding their national conference here in Sacramento. We're going to be actively engaged in that and sending staff to that.

We also have this session proposal. As you can see, it's from consumer products to the environment, CEC source identification and novel exposure pathways to improve environmental policy. So if you have some interest in that, any speaker suggestions, Anne Cooper Doherty is here today and she's helping coordinate that effort. So we hope to see you all in November at

SETAC.

And lastly, I just want to say thank you to all of you. Using the SpaceX booster rockets as an example is that -- this is a different metaphor. So you all are like booster rockets to us in helping us achieve our mission and launch and successfully get out there and then come back and do it again, so we changed the metaphor a little bit. But thank you for all your input and help, and we look forward to a good meeting.

Any questions?

CO-CHAIR FONG: Karl, thank you.

Okay, I don't want to do this, but you know your rocket thing, one of the chemicals that I worked on when I was graduate student was, in fact, rocket fuels, so I don't know what's going on.

MR. PALMER: You'd say you're more comfortable with that than with fish, is what you're saying?

CO-CHAIR FONG: Right. Karl, thank you very much for your --

MR. PALMER: Okay. All right.

CO-CHAIR FONG: -- presentation.

MR. PALMER: Thank you.

CO-CHAIR FONG: At this point, are there any clarifying questions for Karl?

As a reminder, this question and answer period, it's directed at presenter and their, I'm sorry, presentations on these slides. If you have questions that are more suited for panel discussion, please wait until then.

Questions for Karl on his presentation? Yes, Michael?

MR. CARINGELLO: Yeah. Out of curiosity, Karl, with the mattresses, the foam mattresses, do you think, in your experience, that what happened is that there were companies using those flame retardants and that they formulated out before the regulation became finalized, and so basically we effectively, in that way, you effectively mitigated the problem, even before it entered into the full process?

MR. PALMER: Yes, Mike, I think that's exactly what happened. And in talking to the trade associations in this, in these channels, they were aware of that. They were advising their folks that there are alternatives that don't contain these, so they got out ahead of it, most of them.

Of course, we're still concerned that not everyone is that well educated, knows about the regulation, knows about the options. And so we're going to be looking out across the market to make sure that maybe some of the laggers, that we help them be in compliance, as well, if that's not the case.

So -- but, yeah, it's a great experience for us, learning for us, working in products that the channels and the information can -- people can do a lot of good things on their own, and expeditiously.

CO-CHAIR FONG: Karl, thank you.

Elaine?

MS. COHEN HUBEL: Just following up on that topic, so you're real comfortable that the alternatives then are -- you know what they substituted or how they addressed the needs?

MR. PALMER: Well, that's a good question. I mean, in this case there were foams available that didn't include any flame retardants.

MS. COHEN HUBEL: Okay. So that's what they did --

MR. PALMER: So that's what they --

MS. COHEN HUBEL: -- removed them?/

MR. PALMER: -- were telling us they would do. When we go out and do some of the sampling and analysis later this spring, we'll get a pretty good snapshot of what actually is and isn't there, including those two that we focused on. And that will give us in insight, I think, in terms of did they move to something else or not.

I think one of the other interesting things is in many fabricated products a lot of the manufacturers may not know exactly what constituents are in -- they just -- they may be getting foam, or in this case you can get recycled foam. Some of the foams that are shredded are waste foam and recycled and it may be a hodge-podge, so it will be interesting to see what we find.

CO-CHAIR FONG: Thank you.

Becky?

MS. SUTTON: I also wanted to follow up on that, just to ask if you guys had an Analyte List that you were looking at or was it going to be specific to the couple of flame retardants that were regulated, and would those data be

public?

MR. PALMER: Yes and yes. Certainly, we're going to look at the two that we listed, but I think there's 21 or 23 others, I'm not sure. We've been doing sampling and support for Bayer Hefty [sic] in their labeling requirements. And --

MS. SUTTON: What's ??

MR. PALMER: Oh, I'm sorry, the Bureau of -- they're the folks -- they're the folks that are responsible for labeling requirements for mattresses and furniture, and I can't remember the acronym name. But --

UNIDENTIFIED FEMALE: (Off mike.) (Indiscernible.)

MR. PALMER: Thank you. Yes. Home Furnishings and Thermal Insulation. It's a mouthful.

But we've been -- our lab has been doing that work for a couple of years, so all the methods and standards are there. And we will be looking much more broadly than the two chemicals that we were listing.

MS. SUTTON: And the data will be public?

MR. PALMER: Oh, yes. Yeah. What we'll

do is we'll probably -- you know, we can put our sampling plan out and all that jazz, but we will be -- we won't be making our -- where we're going to sample and all that public. But once we get the results it will be public, certainly.

CO-CHAIR FONG: Jack?

MR. LINARD: More general question: What learnings did you obtain from the first Work Plan that you've now applied to the second Work Plan, or will that come out in the more specific? I'm just curious as to what you did or did not --

MR. PALMER: Sure.

MR. LINARD: -- (indiscernible).

MR. PALMER: Sure. Wow. That's a -- we learned a lot. I think just I'll speak to some general things. When we get to the discussion about the Work Plan, we can probably address them more specifically.

One of the things is that culturally, most of the folks, except for the new folks that we've hired, have come through our Cleanup Program and our Hazardous Waste Program. We've been focused on waste and a very narrow perspective. And as we get into the product world, we've learned a lot about how supply

chains work, how manufacturing works, how information flows from, you know, source materials, chemicals to interim products and materials, and that's been a fascinating and enlightening process. And that differs often greatly between different categories of products, formulated versus manufactured, for example, so that's one big thing.

I think we've learned a lot about collecting information. We've been fortunate to have a good relationship with EPA and who have helped us look at the sources of information they have. We have developed a relationship with ECHA and the EU, trying to -- and Canada, trying to make sure that we understand what their systems are and that we can collect information that has already been collected and is out there, not reinvent the wheel, so we've gotten much better at that.

As Meredith alluded to, we've done a lot internally to standardize our process and to have internal checks and balances on information, to challenge each other and vet information and make good decisions in the interim, so that's been a big effort.

But I think that overall it's been a very productive thing, that we've learned a lot. And our whole team has learned a lot in terms of how to be more efficient and how to be accurate, and then, also, to get information back out to all of you and get feedback so that you understand our decision-making process, as well.

CO-CHAIR FONG: And Ken?

MR. GEISER: Yeah, Karl, let me just start by just congratulating you, a good presentation on a program that has come a long way. And I'm really very pleased to see all the work that you've done in meeting the Work Plan and other such things. The fact that the program is moving forward successfully is terrific and I really feel great about what (indiscernible).

In fact, as I travel around, and I'm doing a lot of international work at this point, I hear references to the California Safer Consumer Products' work more often that I would think, places -- just talking to the government people and things like that.

So I think it's just really important to say how important the work that's going on here really is to the rest of the world, which is sort

of one question I really have, and that is on the PFAS chemicals, this is a very hot area. There are a lot of people doing a lot of work in this area. I think there's some -- a lot of work going on in Sweden and Germany. I think there's work going on in Japan and all.

How are you -- are you in touch with all of these? How you doing coordination? Are you all -- do you think you're duplicating each other? Do you have a sense of who's doing what and how you can bring a lot of that together?

MR. PALMER: Well, thanks, Ken, for your comments about the program. You know, really our progress has really been on the backs of our great staff and our leadership, and keeping the nose to the grindstone. And a lot of times you don't see all the stuff we've done, but I think you'll see, and PFAS is a good example, is when we come out with our next document on PFAS, you'll see that we are not trying to reinvent the wheel. We are trying to talk to all of those people who are in that space for a variety of reasons and get up to speed. And much of our job is about collecting and sorting information.

So I think that in the context of our

framework, which is getting information to make a decision to move something forward, we're doing pretty well on that. And our criteria is different than some other folks; right? So certainly PFAS is a good example, where there's people concerned about drinking water contamination in North Carolina or -- you know, in many of the states that we talk to are dealing with that in some different context.

But one of the great things about what we're doing is that because the nature of our process is to look at the nature of the chemical first, or the class of chemicals in this case, a lot of the information or the questions about that information that we are interested in, many people are interested in. So I think that will be helpful as we move forward so that not only we can say what our findings are and how we want to use it in our context, but we'll get additional input from people who see some similarities of concern or interest on all sides of the spectrum, government, industry, efficacy and academia, so it really leverages that.

CO-CHAIR FONG: And Dr. Williams?

DR. WILLIAMS: I just wanted to add

another layer of perhaps detail to what Karl just said, which is we are very plugged into what's happening. Simona Balan has been our point person on the PFAS chemicals and she's very active in the international research community. She's authored some very important publications. So we have expertise that's very plugged in to the landscape on that.

We do have our West Coast Green Chemistry Memorandum of Understanding. And under that MOU all the states, Washington, Oregon and California, are looking at PFAS chemicals in different ways. And so we have a very active conversation going on right now about who's doing what and let's leverage each other and not reinvent the wheel. So we're trying to do what you're saying, which is where should we be versus where should Washington be, for instance.

And then I will also say that, obviously, the NGO community is very, very focused on PFAS right now. And I know they're looking at how they coordinate their efforts in trying to be strategic in that way. So we'll try to stay abreast of anything that comes out of those coordination efforts again to provide some

efficiency to what we do.

CO-CHAIR FONG: And Julie?

MS. SCHOENUNG: Thank you, Karl. And I also want to commend all the progress from all of you while I have the opportunity to really congratulate on the progress on this program. As an educator, it's really fun to tell students that we're making progress, whereas before it used to be just, well, we're trying to figure it out. So this is a case in point that I use regularly in my courses, but that's not what I wanted to ask.

My clarifying question, maybe this goes to the Work Plan later in the day, so feel free to defer, but the lead acid batteries, I understand the history and the recycling concerns and that it came as a request, but are you also looking broadly at batteries and issues associated with them as possible priority products?

MR. PALMER: Thanks Julie. Well, first, let me -- a side comment on education.

I just want to say, Meredith alluded to that we're getting good people in the program. It's really great to see some of the young people

coming out of school who have an awareness now of green chemistry concepts, what we're doing and what all of you are doing in your space, and so that's very exciting to see because old guys, like me, never heard of that stuff.

So anyway, but to answer your question, we're looking at lead acid batteries quite broadly. Lead acid batteries is not just the battery in your car, it's a battery in your golf cart, in your cell tower, in your cloud backup, and a whole bunch of other different applications. So this is a good example of when you -- when we start looking at a product category and you start seeing how broad that category is, and specific and deep, so there's a lot of different types of lead acid batteries. We're not looking at primary batteries, right, you know, or other non-lead acid batteries, other than to say that some of those, obviously, chemistries are alternatives to lead acid batteries, and that comes into the decision-making process, as well. But we're primarily looking at lead acid batteries. But again, it's a huge --

MS. SCHOENUNG: It's a heavy space.

MR. PALMER: It's a heavy space, yes.

CO-CHAIR FONG: Thank you very much for your presentation.

Next up we have --

MR. PALMER: thank you.

CO-CHAIR FONG: -- two presentation on the AA, first with Tony giving us an overview of DTSC's AA WP, and then Xiaoying giving us a presentation on DTSC's evaluation of AA examples.

Tony?

MR. LUAN: Good morning. Let me see if I can figure out how to work this thing. Oh, perfect. My name is Tony Luan and I'm here to present the Alternative Analysis Team's Work Plan.

We have a team here in Safer Consumer Products, mostly engineers and scientists, with a wide range of expertise. We have expertise in manufacturing, toxicology, exposure, statistics, chemistry, economics, and much more, that implements the Article 4 of USEPA Regulations or all things related to alternatives analysis. I should note that the team members typically belong to more than one team, and usually many more than one.

This slide is just a reminder of the Article 5 USEPA requirements that we're implementing. In the near future, our goal is to assist stakeholders, mostly responsible entities, with their AA preparation if they choose to prepare one.

To help responsible entities with their alternatives analysis, we've recently completed the Alternatives Analysis Guide. This guide can be found on the DTSC SCP website listed at the bottom of the slide. And to help you out a little bit, I produced a little zoom in of that web page. Look for the AA button. There's a lot of good information there. Or just Google DTSC AA Guide. That's what I do. It's a lot easier.

As a reminder, the alternative -- all the requirements in the regulations to complete an alternatives analysis is included in the guide. And it even includes a chapter on how to self-evaluate a completed AA. This chapter was included in response by requests by the Green Ribbon Science Panel. This guide is only one tool to help responsible entities. It's a very useful tool. And we're going to be referring responsible entities and other stakeholders back

to the guide every chance we get.

We want to be supportive and responsive to stakeholders, so we conducted a survey to identify areas where they might need more help. The survey was sent out a few weeks after the release of the AA Guide. As you can see, we had 68 respondents out of about 3,000 that we had on the email list that we sent it out to. The top three topics of high interest are listed. The topic areas in the survey correspond roughly to the chapter headings in the AA Guide. For example, product requirements in the survey corresponds to Chapter 2, Product Requirements and Alternatives. Decision analysis in the survey corresponds to Chapter 10, Selection of Alternatives. And exposure, luckily, maps directly to Chapter 6, Exposure.

Now the results were a little bit surprising. We expected economics to be an area of high interest, and we even planned a webinar to address the subject, but it turned out to be one of the areas that were ranked the lowest.

Besides the guide, there's other efforts to help responsible entities, and we have it listed in the next slide.

The current efforts are mostly directed towards the SPF industry, spray polyurethane foam industry, since they will be the first ones to submit AAs, but they also include -- the efforts also include capacity building that will be useful for all subsequent priority products chemicals of concern.

Under capacity building, we're evaluating testing and identifying modifications to the AA-specific models that responsible entities will use to submit their AAs through CalSAFER. I think Karl talked a little bit about the CalSAFER system. It's a web-based information system where all the petitions and everything else can be submitted. And most importantly, it can be viewed by the public. You can reach the CalSAFER site through the SCP site that I listed earlier.

So also under the community practice, we have staff that's participating in a number of workgroups. They're trying to develop the community of AA practice, such as the Organization of Economic Cooperation and Development, OECD, the Interstate Chemicals Clearing House, IC2, the Interagency AA Workgroup and the BizNGO AA Workgroup.

For the last item, under capacity building for alternatives analysis evaluation efforts, the AA Team is preparing the internal processes to review AAs submitted to DTSC. This is critical because of the short time frames involved. As you can see, 180 days after the product listing regulations become effective the preliminary AA is due to DTSC. And DTSC only has 60 days to review this report and issue a notice of some sort. The AA Team is focused on trying to make this process as soon as possible for both responsible entities, and for ourselves.

We are also reviewing existing AAs, both to gain experience and to find good examples. Our efforts will be discussed in much more detail in the next presentation by Xiaoying.

So we're preparing fact sheets as part of our current outreach efforts because it was mentioned that a guide to the AA Guide would be helpful. The AA Process Fact Sheet is intended to be a brief outline of the important highlights of the alternatives analysis process. It's meant to be read before reading the AA Guide. This is intended really to be the guide to the Guide.

In addition, we're putting together fact

sheets that identify different ways to meet the AA requirements. A responsible entity may decide to remove the chemical of concern from the priority product, or they may remove the priority product from the market, or even replace the chemical of concern by a non-candidate chemical instead of submitting an alternatives analysis. The notifications in lieu of an AA fact sheet is going to inform those who plan to submit a notification, rather than submitting an AA.

For those that will submit an AA, there are a variety of AA reporting options. In the third fact sheet we'll outline the available options, such as an abridged AA when there are no feasible alternatives. So we're working on these fact sheets and we're planning to release these fact sheets sometime in the next few months.

As part of our current outreach efforts we're planning a series of webinars and expanding the toolkit available to responsible entities. Input from stakeholders will help us select the topic areas of these webinars.

Although our survey did not list economic impacts as an area of high interest it's a unique aspect of the SCP's AAs, and we want to provide

an example of how others have successfully addressed this topic. This presentation will show how expert practitioners have conducted analysis monetizing chemical impacts to human health. Dr. Ali Kamal of USEPA, (indiscernible) of Air Quality Planning and Standards, I hope I got that right, will present how he monetized the health impacts of select air pollutants. This will be on March 4th, 9:00 to 10:30 a.m. Pacific Standard Time. And you can sign up for this webinar from the SCP web link that I listed earlier.

And also, in the summer, I think around August, we have a webinar planned that will provide a high-level overview of life-cycle assessment and exposure assessment approaches, and it's going to be followed up with a workshop right here at DTSC. The workshop is going to provide materials and information about the theory and principles, as well as various case studies of life-cycle assessment and exposure assessment approaches. The webinar workshop materials will be recorded and made available for viewing through the SCP website.

There's going to be other webinars and

workshops, topics' presentations, and dates are to be determined as we get more input.

And we also have a preliminary Alternatives Analysis Report template that we're putting together. It was mentioned during a Green Ribbon Science Panel meeting again that it will be good to have a template for AAs. We thought it over and we've figured out that perhaps a preliminary AA Report, which is a report from the conclusion of the Stage 1 AA, it seemed very well suited for a template format, so we've tried to move forward with that. It should be available before the final SPF Priority Products Listing, possibly around July 1st or so. It might even help the AA Team in reviewing the preliminary AAs with all the information organized in a standardized format. It includes a report outline with instructions to fill in the blank section for the preparers information, responsible entity information and supply chain information, and then also the required sections that reference both the SCP Regulations, and also the AA Guide wherever possible.

So in conclusion, we're going to be busy for many years as we review AAs and work with

stakeholders, but this is so that we can all work together and find safer alternatives. Thank you.

CO-CHAIR FONG: Tony, thank you very much for your presentation.

Next we're going to have Xiaoying provide an overview of DTSC's evaluation of AA examples.

Xiaoying?

MS. ZHOU: Okay. Good morning everyone. My name is Xiaoying Zhou. And next, I'm going to give you an introduction on our effort to review AA examples.

Since the release of the AA Guide, we have received a lot of the public comment, including the Panel's recommendations from the last meeting to ask us to add more examples. Also required by regs, we have to post on the website the links to the examples.

So as part of the Stakeholders Support Plan, as Tony just covered, probably in April or May we are planning to post the links to those AA examples with a comment why we think they are good ones. And as we go, when we receive the real California AA reports and review additional case studies, we will continuously update the postings.

So we set up the selection criteria for the examples we are going to pick, and the review. First, they have to cover a chemical of interest used for specific applications. And next, they have to have relatively complete scope of the AA, which means they have to include the sections' identification, alternatives evaluation and compilation of the alternatives, and the conclusions selection of the alternatives.

Also required by the regs, they have to be publicly available examples. They have to address some aspects of the California AA requirements, and they have to have some certain degree of the transparency for us to reveal them.

Lastly, we also prefer the ones published after 2000, but in some cases we may select some examples that may not meet one of those criteria if we think they can help to convey or enhance some information that would be helpful for stakeholders.

So where to start? Nationally and internationally there's different organizations have developed different AA frameworks. They also start to compel case studies to support their program. For example, in U.S., Interstate

Chemical Clearinghouse has an AA library. And USEPA's Safer Choice Program, previously designed for the Environment Program, has published a lot of the AA reports. And in the EU, ECHA has brought together the examples of the analysis of the alternatives in the context of their REACH. And the SUBSPORT is a wide portal in developing Europe and try to support the companies for their substitution efforts to meet EU legislations. So we try to make the selection cover those different frameworks and try to select the ones we think that can demonstrate some strengths and best practice and convey certain messages to stakeholders.

However, the ones not selected doesn't mean they are bad examples. And our selections is not intended to be exclusive or complete.

So in the first round of the review, we have collected and reviewed totaling 58 examples. Among the authors, the government and manufacturers each account for one-third, and the rest come from the NGOs and academia. And we tried to make the selections cover those different sectors.

And for each of the AA examples, we

reviewed them against a common template. And we focused on the review of those topic areas listed on these slides, and they align with the two-stage AA process required by the regs, and also the chapters in the AA Guide. And for each topic area we revealed their transparency and documentations of their methodologies' tools and -- but their reasonings and the rationale on whether to tell the good stories to support their conclusion.

And we also revealed the relevance to the California requirements, and for each topic area, whether they address their data gaps and uncertainties.

And finally, we tried to make the distinctions between the ones that address the California requirement to some degree and those really strong ones, and we use a plus and triple plus to indicate them in the summary table in your background document, which I will cover that shortly.

And because California requires a really comprehensive list of the factors to be a considered for AA process, and each factor has multiple layers of subfactors to be considered.

However, those existing AA examples, they were not developed to meet California's AA framework. So for this round of the exercise, we are not searching for comprehensiveness.

And for each AA step, and people like to use different tools from different toolboxes, different frameworks, to meet their requirements, so we support that flexibility and their professional judgment to choose any tools they think appropriate to meet their framework and the purpose.

And so for our review, we did not evaluate whether certain tools used are more appropriate than other tools. And also the selections does not mean we endorse certain methodologies or certain tools and result included in the reports.

And other things to keep in mind, and we did not do the quality -- focus on the quality check of the supporting information, which means we didn't verify their citations or calculations, and we didn't check the adequacy of the analysis. And also overall, it is not compliance checked. And as I just mentioned, those different examples, they were intended to meet different

frameworks and purpose. So for this road exercise, we're not searching for the bad examples.

And to feed for the discussions for this meeting, we selected 13 from those 58 examples and tried to make them to represent a variety of the AA frameworks and organizations in the industry sectors and have the good coverage of the product chemical combinations.

And here is a summary table for the 13 examples. And you will see the -- much more details in your background document. And the triple plus, again, means they really demonstrate some strengths and align well with California requirement. And the plus indicate they address the California requirement to some degree. And the -- by the way, in the right half for each examples, you will see some justifications for those triple-plus area.

And some general observations from our review. In some areas you will see some general gap represented by those examples due to the different requirements set up by different frameworks. For example, it's not surprising to see the identification, the relevant factors,

mostly not covered because it's very unique to California requirement. So to address that one we probably will develop some tools to help the stakeholders to meet that requirement. For example, the tailored fact sheet, if there's some (indiscernible) or topic to stakeholders, or we can (indiscernible) some specific pilot studies.

And for some other areas you will see some examples address some aspects of the requirements. For example, the exposure, life-cycle impacts and economic impacts. However, they may not be good enough to -- oh, sorry -- to really align well with California's requirements. And so for that one, we tried to highlight the strengths demonstrated by those examples and the best practice. And we also tried to ask the Panel's input on our we can elaborate that resource and knowledge in those expertise areas to make the tools, data and analysis to feedback to -- with California's requirement.

And by the way, that coding is not really categorical yes-or-no data. The real results more reflect a spectrum, so sometimes it's also very challenging for reviewers to decide which one to put with. Sometimes we think maybe the

double plus is more better representations.

And as Tony just mentioned, this is a full result from the stakeholder survey we sent out after release of the guide. And the top three -- top areas selected by the respondents is product requirement exposure and decision analysis, so that may provide another perspective from stakeholders, how to prioritize those topic areas for our future trending needs and research direction.

And although the economic impacts, well, the least constant ones from the survey result, it's a chapter -- during the comment period we received the most comments on. So that's why it was rescheduled to March (indiscernible), and to try to provide some insights on that topic.

And finally, you also see the list of questions from the background document. And we tried to ask the Panel's comments from three aspects. The first one is focused on the technical content on the analysis of the strength of the examples. Do you agree with our analysis? And if so, why? And if not, why not? And do you have some other additional examples?

And the next one is feedback to the

program and on our implementation strategy, whether we are on the track? And do you think we need certain expertise to review the examples? And how can we cover the diversity of the areas required? And how can we facilitate the development of the example assessment, and how can we follow up on that effort?

And the third one is recommendations for the communications with stakeholders, and what kind of message we need to convey to stakeholders? And what is the best means of presenting our findings to stakeholders?

The last, but not least, and this is really teamwork, so I really appreciate the hard work and the contributions from the AA members, and they're sitting over there. And so if you have a chance you can have a chat with them during the break. And it is a very responsive and fun team to work with, so I also learn and enjoy from it.

So next is my contact information. If you have questions after the meeting, you can contact me directly. Thank you.

Do I just hear any clarifying questions?

CO-CHAIR FONG: Is there any -- thank you

very much.

At this time are there any clarifying questions for Tony and Xiaoying?

Tony, would you like to come up and join the discussion?

We'll start with Ken Geiser.

MR. GEISER: Very good. Thank you for your guys' presentations. My first question, I guess, is largely to Tony.

So the focus on the guy and the spray foam insulation, which I guess that's the one that's highest that you're implementing at this point, can you say a little bit about, first of all, how many firms or enterprises are involved in this at this point?

And secondly, sort of are you engaged in a dialogue with them? Do you know what they're doing, actually doing the alternatives assessments?

Probably fourth is you mentioned that -- or Xiaoying mentioned that you were doing some training on specific issues that came up from the survey, but are you doing training specifically on how to do an AA generally? I'm sort of interested in who's actually doing these, the

capacity they have, and what work do they have, and things like that?

So first of all, I'm interested in how many firms, so --

MR. LUAN: Okay. So the SEPA Team, the ones that actually put together the priority product -- the Priority Product Chemical Concern papers, they're the ones that are engaging with the manufacturers quite a bit, so I'm really talking outside my area here. But from my understanding is that we've had no priority product notifications from the mats (phonetic). And we, of course, haven't finalized the spray polyurethane foam regulations yet, but I believe that there is possibly up to 17 firms that we've identified.

I'm sorry, Karl, did you want to say something?

MR. PALMER: Yeah. Let me jump in here, Ken.

Well, first, as Tony said, we haven't finalized the rule yet so, you know, we don't want to be too premature. But in our discussions with the industry, they've been very active over the last several years with us, there's roughly

18 -- we anticipate 18 to 20 entities that would be subject to the regulation. Most of, if not all of them, are members of the Center for Polyurethane Institute which is a subset of ACC, who's here today, and they've been very engaged with us. So we actually surveyed them back when we were doing our economic analysis for the impact of the rulemaking. At that time there was some sense that many of them might work together to do joint aspects of the AA.

Since that time, one of the members has come out saying that they have an alternative that's supposed to be on the market this year, so that might change some things. But we know mostly who those folks are and we're in good contact with them. And they gave us extensive comment on our rulemaking, an so we know a lot of the areas of their -- of interest. And they know where to find us, too, so we will work with them, in part because while we want everyone who's interested in the process to contribute, these are the folks that are first in line that have to do it, so that's why our focus is there.

CO-CHAIR FONG: Ken?

MR. GEISER: A follow-up, Karl. Thank

you.

Are all -- or do you expect, I guess is a better way to say it, that all of the work will be done in-house in the firms, or do you expect that the trade association will do it, or do you expect there may be consultants that may be involved?

MR. PALMER: Right. Our discussions, it sounds like a little bit of all of that, that some of the firms don't have in-house capabilities. Some have a lot of capability in certain aspects, toxicology, for example, so I think they would be looking to get help to coordinate and do certain aspects and pull it together.

But again, we allow them to collaborate with each other to the extent they want to and can, and so they could do parts of that they could share or they could do one and they could all sign on, or anything in between.

MR. LUAN: I think in responded to -- in response to some of your other questions, at this point, I don't know who's going to be filling out these AAs. Our training is intended to be directed towards the people that are going to be

submitting this first. But more of a general nature, we're trying to build a community practice. We're trying to get everybody up to speed as much as possible. So we're aiming it towards SPF, but we're trying to make it as broad as possible to bring up the level of expertise, if at all possible.

I'm not sure if I've answered your question.

MR. GEISER: Thank you.

CO-CHAIR FONG: I actually have a question for Xiaoying.

Would you mind putting your presentation back to the slide where you had the different factors that were not considered or -- I just -- I got a little confused about what you were trying to tell me about --

MS. ZHOU: This one?

CO-CHAIR FONG: Yeah. This one and the one after that.

When you say not review for comprehensive -- or go to the next slide please. Are you saying that you do not review like factors related to LCAs or how they approach the LCAs or --

MS. ZHOU: No. Like maybe like refer to before the highlight, make -- always make the examples. If we put always relevant life-cycle segment and the different factors together, that's going to be maybe hundreds of the factors. Sometimes for you to consider to identify, especially before you identify which factors are relevant. And so for this exercise, we didn't really to check every factors they have to consider, and mostly they focus on their topic areas because they are not intended to meet our requirements.

CO-CHAIR FONG: Okay. Okay.

MS. ZHOU: So does that answer?

CO-CHAIR FONG: Yes.

MS. ZHOU: Okay.

CO-CHAIR FONG: Dr. Williams?

DR. WILLIAMS: So really, I just think the take-home is that we took them at face value; right? We didn't go back and say, well, why did they use this tool or that tool, we just said, okay, this is the tool they used; based on that, having used that tool, how is the example? And so -- and we didn't -- you know, we took -- we didn't go through and say, what didn't they

include, we just took it for what was included.

CO-CHAIR FONG: Okay.

DR. WILLIAMS: Does that make sense?

CO-CHAIR FONG: Yes, absolutely.

Would you mind going back to the slide before this one please? No, no, this is --

MS. ZHOU: Before this one?

CO-CHAIR FONG: No, this is good.

MS. ZHOU: Oh. Okay.

CO-CHAIR FONG: I guess I'm just a little confused about not review for comprehensiveness.

How do you make the decision in term of putting like the one plus sign versus the three plus signs if you didn't review the AAs for comprehensiveness on these particular factors?

MS. ZHOU: So for that plus and triple plus, we focused on the transparency and documentations, and like we always see how well they tell their story to support their document. But we didn't really collect, see which exactly the subfactors they checked or not checked. So we now the requirements, they checked all the factors required in the regs.

CO-CHAIR FONG: Oh. Thank you very much.

MS. ZHOU: Okay. Yeah.

CO-CHAIR FONG: Are there any more questions for Tony?

Oh, Ann?

MS. BLAKE: Sorry. For once I am actually asking a clarifying question.

So to follow up on that, if I understand this correctly, that you would track and say did they actually touch or claim to touch hazard exposure or whatever, and then you -- so you didn't go in, in depth, to see if they would meet the California requirements because they weren't created for that?

MS. ZHOU: Yeah. So we only like --

MS. BLAKE: So you --

MS. ZHOU: -- focused on --

MS. BLAKE: So that's what you meant by taking them on face values, that they're claiming to have touched hazard and/or exposure and/or some other area? Okay.

MS. ZHOU: Yeah. So we only reviewed those general topic areas.

MS. BLAKE: Right.

MS. ZHOU: But we didn't really check those subfactors they have to evaluate it during the AA.

MS. BLAKE: And then there are a couple of areas that are unique to California, the ID'ing of relevant factors and initial screening --

MS. ZHOU: Yes. Yeah.

MS. BLAKE: -- that they might not have claimed that that was something they were doing because they weren't designed -- the AAs were not designed for that, but you sort of extrapolated from their; is that correct?

MS. ZHOU: Yes.

MS. BLAKE: Okay. Great. Does that help?

CO-CHAIR FONG: Thank you.

Julie?

MS. SCHOENUNG: Not to stay on this topic, but just to make sure I'm understanding, so you said you started with 50-some examples --

MS. ZHOU: Yes.

MS. SCHOENUNG: -- and narrowed it down to 13.

MS. ZHOU: Um-hmm.

MS. SCHOENUNG: So if you didn't try to use these requirements to come down to 13, how did you pick the 13? Maybe I missed that along

the way.

MS. ZHOU: Oh, how to pick up the 13?

MS. SCHOENUNG: I mean, you obviously evaluated each of the ones that you asked us to look at here of the 13, but --

MS. ZHOU: Because we --

MS. SCHOENUNG: Okay. So you're mostly looking for a --

MS. ZHOU: Yeah.

MS. SCHOENUNG: -- an original example?

MS. ZHOU: Yeah. Because there's -- a lot of the examples, they cover the similar product and chemical combinations, or some examples, maybe there's -- ICCA has like ten-plus examples, just similar frameworks.

MS. SCHOENUNG: Okay.

MS. ZHOU: So we tried to use that 13 to really have the good coverage on those different organizations and different frameworks.

MS. SCHOENUNG: So you're not advocating for these 13 per se? This is to give kind of a broader view of what different organizations do for different types of products --

MS. ZHOU: Yes.

MS. SCHOENUNG: -- and sectors?

MS. ZHOU: Yeah.

MS. SCHOENUNG: Thank you.

MS. ZHOU: Um-hmm.

CO-CHAIR FONG: Thank you.

Are there any more questions for Tony and Xiaoying at this point?

If not, I'm going to turn the mike over to my Co-Chair Kelly.

CO-CHAIR MORAN: Okay. So before -- is our break next?

CO-CHAIR FONG: Jo.

CO-CHAIR MORAN: Is that right?

CO-CHAIR FONG: No. Public comment is next.

CO-CHAIR MORAN: Public comment. Okay. So before we go to the public comment, just to help the Panel Members prepare for the discussion, I have two things, a minor procedural thing, which is that I think everyone knows, but because everyone's starting to do that, we have this tradition of making your name tag vertical if you want to talk and horizontal when you're done, so that's how we're calling on people. And I think everybody's doing that, but just so those in the audience is wondering how is that they

know, that's what's going on.

And then the other thing is we have a lot of time for discussion of AAs and AA examples here today. And we're going to break that down a little bit on the fly, but the first part, we want to get your general reactions to the examples and raise major issues, including anything you might think would be useful for the Panel to discuss in the hour between our break and lunchtime. So Art will be Chairing that and we'll go once around the panel and try to get through everybody. If we don't, we'll finish up after lunch.

Then we're going to have a little caucus, the Chair, us Co-Chairs and staff, to figure out what we might talk about over the next couple of hours. So if you have something you think it would be helpful to have a Panel discussion on, please do raise it in that first hour.

And then in the last part of the discussion, we're going to try to cover a set of specific questions that the Department gave us. So if you all go to that background document, which is in your packet under Background Document, that tab, very nicely done, there's --

one of the really nifty things in preparing for this meeting that the Department did was give us some excellent charge questions. And on the first page of the background document under AA, where it says Topic 1, so that's on the -- so that's right after the background document thing, there's a whole set of questions.

So we're going to try to catch early parts of the discussion, the questions related to the strength of example, and also the first couple of questions around did DTSC correctly assess the example and what was missed? We want to catch that in the parts of the discussion before the last hour.

And then in the last hour, I want to come back around and specifically talk about the last three bullets under DTSC feedback and about communication with stakeholders. So I suggest holding off your comments about does the Department have the right expertise? What can DTSC do so facilitate development of example assessments or the recommendations for how the program should follow up on these examples? What aspects of our valuation need to be conveyed to stakeholders? What's the best meeting for

presenting our findings to stakeholders? Those questions, we're going to come back and talk about at the end, so don't dig until those until we get to that last segment. But the first ones, about the example, about, you know, more generally issues with AAs, that's going to be the time to talk about those.

And so in addition to your individual comments, do think about over the break and before you make those individual comments, we -- one of the strengths of our recommendations is the ability for multiple Panel Members to weigh in on a particular issue or topic, so think a little bit about that, too, things where, you know, you've got it; if four or five people mention it, we're probably going to stick it on the list for the afternoon. But if there's something, even if just one person mentions it, if they say, you know, this is really important that we get some weigh-in on, that's really helpful.

We have a mix of skillsets, so folks here with very different parts of the AA are a part of their expertise. We also have some folks here who are doing AA work a lot, and other folks who

aren't doing it very much at all, but we're reviewing. So we've got some real different perspectives on there. And in the discussion, one of the things that we can do particularly strongly is do that mix of the theoretical, here are the big gaps, and the practical, we've got some issues with addressing those gaps.

So those are all challenges for you as we move to the next parts of the discussion.

CO-CHAIR FONG: Thank you, Kelly.

Actually, Marcus just reminded me that the break is next, before the public comment, so we will take a break now and reconvene at 10:50.

MR. SIMPSON: Thank you, Art.

Just one quick favor, if I could ask. We'd like to get a sense of how many people may be wanting to give public comment? By show of hands, can you maybe raise your hand and let us know? Thank you. That helps us stage it and plan it accordingly. Appreciate it.

Art, you said you want it at 10:50?

CO-CHAIR FONG: Yes. That's according to the agenda.

MR. SIMPSON: Okay. We're about ten minutes ahead in the schedule, so --

CO-CHAIR FONG: Well, actually, let's stay with the schedule because of the people on the webcast.

CO-CHAIR MORAN: I don't think they have the times.

CO-CHAIR FONG: Oh, they don't?

CO-CHAIR MORAN: They don't publish the times.

CO-CHAIR FONG: Oh, they don't? In that case, we'll reconvene at 10:45.

MR. SIMPSON: Okay. Sounds good, Art. Thank you.

(Off the record at 10:26 a.m.)

(On the record at 10:46 a.m.)

MR. SIMPSON: Okay. Thank you, folks. We're going to reconvene now.

And -- but before the Panel begins their next round of discussion, this is your opportunity to give public comment. Again, public comments are available on the rear table. And also, my good friend, Kenneth, has some blank comment cards, just in case someone would like one.

I'd like to announce, to note that the Panel is not able to respond to comments or

questions today as this is a working meeting, and I just wanted to issue that reminder.

Also, for those that are following the meeting via webcast, just one more reminder, please email your comments to saferconsumerproducts@dtsc.ca.gov. And as comments are received online, we will announce them on your behalf after we take comments from those present today.

And so just one word of encouragement. We'd like to ask commenters to direct their comments to the Panel on agenda and presentation items. Public comments directed to DTSC are not appropriate at today's meeting, and I just wanted to put that reminder in there.

So when we broke we had one individual that wanted to make a comment, and so are there, anyone, any other comments that anyone would like to present? All right. Okay.

So our first comment is from Mr. Tom Jacob. He's with the Chemical Industry Council of California.

And, Tom?

MR. JACOB: Okay. Tom Jacob with the Chemical Industry Council. Welcome back. You've

been missed. I just wanted to comment, particularly on the initial analyses of the publicly-available documents. This is an area that our Council had commented on pretty regularly in the evolution of the regulation.

And one of the reasons for our comments was just that we wanted to make sure that if, to the extent that publicly-available AAs are utilized in satisfying the demands of the regulation, that they're given the same scrutiny and subjected to the same demands that an originally-drafted AA would be.

And I just wanted to offer the comment that I'm pleased with the direction that I see being taken here. To me, it continues demonstration of the kind of disciplined approach that staff has been taking as this whole process has advanced, which has given us a good deal of encouragement that we're in good hands. I'm sure we're all going to have differences at one point or another as we get deeper and deeper. But we think -- we do recognize that this is a pioneering effort from a regulatory standpoint.

And frankly, it deserves the level of scrutiny, the level of sort of a very measured

judgment that I think both the staff and the Committee are giving to it. And I think these initial steps on the publicly-available documents and breaking them out into their strengths and weaknesses implies that they're going to ultimately be treated the same as original documents and we think that's appropriate, so thank you.

MR. SIMPSON: Thank you, Tom.

Are there any other comments in the room? All right. Cool.

Karl, are there any comments from our online family? No? Okay. Thank you. It looks like that's it.

Art, I'll turn it over to you.

CO-CHAIR FONG: Thank you very much, Marcus.

At this point we're going to start our discussion on DTSC's evaluation of the AA examples. What we're going to do is actually, first of all, go around the room and let each Panel Member provide input on general feedback, and focusing specifically on the first set of questions that Kelly went over, which I see on the board now.

And so we'll start with Ann. Do you have -- with general comments.

MS. BLAKE: So general comments first, and then the questions later, or questions as part of this?

DR. WILLIAMS: Why don't you ask your question.

MS. BLAKE: Okay. Well, if first wanted to say, I apologize for having to duck out a little bit this morning and missing Karl's presentation. But I just wanted to echo some of the comments I heard afterwards which was, as usual, thank you DTSC staff for excellent, thorough and very comprehensive review of the AA landscape. I really, really appreciate that, especially, you know, the extent that you went to scrape the landscape, as it were, and find everything that you could and evaluate it to the level that you did. Well done.

And then I was -- I had started scribbling little notes about, you know, highlighting potentially where you might see weaknesses and gaps that we wanted to address, and then Xiaoying clicked up her next slide, which is exactly what I had been scribbling

about. So, as usual, you're on top of it.

I think that's an interesting place to look to see where some of the gaps are. Some of the ones are more obvious, the ones that are unique to California's process ID'ing relative factors and so forth. But I think that's going to be where we might need to provide more guidance.

And then I had this thought that came to me, and Kelly may remember this moment, that years and years ago at a Pollution Prevention Roundtable Conference, we had a panel of P2 -- state P2 programs, and they were from three different states, and each one had a strength. And together we had like the perfect P2 program but, you know, it took an entire panel of three states from across the country.

And I think that's what we have here as the beginning of that, is that we have elements of an AA that will do quite well to help us guide what the process of doing an AA will look like under the California program, and we may need to dig a little deeper into that to assemble what we think the best practices are, and then to highlight the gaps where we found that there

were -- you know, there were some areas that you highlighted, Xiaoying, where you said -- and your team highlighted that said, you know, there really wasn't a good example or there were a couple of examples that might work.

And then the question that I wanted to pose was to hear a little bit more from DTSC staff about your experience of doing this evaluation process. You hinted that, you know, there were a couple of places where you didn't want to do one plus or three pluses, or you were thinking it was really more of a two pluses, how easy was it? Where were the challenges in applying this evaluative process? And I think that also will give us some clues as to where we may need to provide guidance for folks that will be completing AAs.

And I'm glad that we've got a small and fairly -- a fairly small group in the SPF folks. I think as we keep doing this, as I've said over the last few years on this Panel, we'll learn this as we go and we'll develop guidelines for the different areas where we need specific guidelines, I think, as we go forward with different product and chemical combinations that

are going to bring up different challenges at different parts of the AA. So we get to do our first shot with the SPF crowd.

But anyway, so leave that question. I'd like to hear a little bit more from DTSC staff of what they found challenging and found easier and not so easy in applying this initial screen to AA.

But overall great work and thank you.

CO-CHAIR MORAN: You want Xiaoying to answer that right now? Okay.

MS. ZHOU: Yeah. Also during the break, Ann asked me just to give a little bit more introduction on the process.

So basically, we also tried to partially test our real AA review process, so we did like a two-round AA example review. On the first round we assign the principle reviewers, and they did all the analysis based on that template across the different AA elements. And they wrote down the strengths, and sometimes like the weakness, and then check all those strong areas.

Then the second round of review we tried to cross-assign them to the different team members, and they have certain expertise like

exposure, life cycle, and function, performance, decision analysis. And then they kind of double check whether they agree or disagree with the first-round reviewers comments.

So we found out, in this process there's -- sometimes it's challenging for us to decide how good is good enough, and especially whether we assign them to really just address to some degree or it's kind of a really strong one. And sometimes it's also hard for us to keep in mind for this round, we are not really searching comprehensiveness, not cover every factors, not cover both external cost and internal cost, not searching for all those like life-cycle stages. And so sometimes we find out it's hard to get a consensus.

But for this exercise, for this meeting, so we just -- because of the short time review, so we just used -- if there is a disagreement, we just rely on the second reviewers expertise and to kind of resolve that disagreement.

But like in real process, we kind of plan to have more open discussion with the team, have more, several, and sometimes go the -- the outside, the team, and go to the expertise to

find out the other opinions and to weigh in.

CO-CHAIR FONG: Xiaoying, thank you very much for walking us through the process.

Julie?

MS. SCHOENUNG: I guess I also wanted to commend the DTSC staff for all the work they've done in reviewing AAs and coming up with this initial evaluation of these. It's not an easy task.

It's challenging to put all of these dimensions together, but I was chatting with Xiaoying, I'm going to brag here for a minute because she was one of my first PhD students, and so I'm very proud that she's here leading the way up the river and back in an area that is no longer nascent and not known and people are starting to know what it means. And so I find, as I look back over the time that she's worked me years ago, and the students, that, you know, to be able to, first of all, find 58 examples in the public domain is a huge step forward in the field. And the ones that they've chosen have worked with various of these organizations, and so they are the leading organizations doing this.

But it's interesting because it's

challenging in the range of things that you're trying to evaluate and how to do that, do it well, do it consistently, where if four different groups around this room were to do an AA on this topic with the data, all the same data, would they actually come to the same answer is not something I'm convinced would happen yet at this stage.

But I think we need to acknowledge that as it is what it is. And you've heard for years, you know, the same thing has been true of all the other related areas. Life-cycle assessment is not perfect. If you have ten different practitioners do it, you're going to get, probably, ten different answers. But it's a lot better than not doing the analysis. And so when I have my students, who are usually engineering students and are not comfortable with this fuzziness of, what do you mean, we don't all get the same answer, but to have them recognize that the exercise of going through it is often as important as what your statement is at the end, it's what did you learn along the way about these chemicals and these products.

And so I would hope that -- I'm not sure

how to do that in a regulatory setting, that the lessons learned by going through this activity are captured, as much as just the quantitative comparison of one material against another because you -- there's so much more in there that you learn, besides saying that one is more hazardous and one has more problems with exposure, and one has economic disadvantages that will never make -- you know, will be difficult to overcome.

How do you get past that in terms of conveying the learning that's occurred by going through this, I think is one thing that -- you know, so when Tony talked about filling out a fill-in-the-blanks, I definitely see the value of that. And harmonizing how you do an assessment on how one organization versus another, so we do get closer to a harmonized, robust assessment, but to not lose the other subtle pieces of information that are buried in the assessment is something that I would just point out.

But I think in terms of AA, the other thing I was chatting with Xiaoying over the -- Xiaoying over the break was my students think AA is the solution. So, you know, I've taught a

green engineering class now for almost 15 years, and this fall, my students, we did LCA and they all had these doubts and questions. And then we talked about things like GreenScreen and hazard assessment. And, you know, some people buy into that. You know, everybody has their preferences. But when we -- when they saw the robustness of the idea of AA and being able to capture all of that and the real engineering function, the purpose and economics, thy really lit into it. We use your guide as part of my curriculum materials. And so there does need to be a way to make it standardized, but balancing that with those more subtle, nuanced lessons that are buried in the deeper documents.

So I'll stop with that.

CO-CHAIR FONG: Julie, thank you very much. And as always, excellent comments, which is something that I missed because you weren't here last time, so thank you so much.

Becky?

MS. SUTTON: I'll just be brief. I really appreciated the breadth and diversity of the examples that we got to read, and also that there was some overlap since Wendy Tse

(phonetic) is going to be reviewing their alternatives analyses, there will be a lot of overlap, obviously. It will be on these regulated priority products.

One thing I noticed and something I hope we'll talk about this afternoon is the deficiencies when it comes to ecological toxicity. And unfortunately on this question about better examples, I cannot provide a better example, but maybe we can come up with some ideas to help the community.

CO-CHAIR FONG: Thank you, Becky.

Mark?

MR. NICAS: Without repeating what other people have said, I have to say that it's a daunting task that you're talking on and I think it's great, and it certainly needs to be done. And I endorse what other people have said previously.

I sheepishly admit that I read one of the alternative exposure assessment examples, but I did pick methylene chloride because that's one of your priority chemicals. And I have real problems with the exposure assessment part of it. I come from the narrow world of exposure

assessment. It's very narrow, and so -- but I know something about it.

And so what I'm concerned about is what credence the department is giving to that, or whether you give a credence or not. And I think that it calls for maybe more specific guidance being offered, at least in terms of where you have a product where there's airborne exposure, where people are applying something personally so that they're actually physically close to the contaminant source, that there needs to be more guidance as to how the exposure assessment is done.

And there was one other general, I don't know, question that arose. One of the admission rate values that was relied upon came from a manufacturer's report, both in chemicals. And it was referenced, that's where it came from, but I didn't know whether this report itself was made available to the Department or is being made available to the public. And I think that any kind of test data that data that is being relied upon should be available. I mean, emission rates are not confidential information, just as the results of animal tox assays and epidemiology

studies are not confidential. We're not talking about any commercial sort of advantage or disadvantage that I can see.

CO-CHAIR FONG: Mark, thank you.

Mike?

MR. CARINGELLO: And I don't want to repeat, though I am going to say, I really truly appreciate all the effort that went into bringing it down from 58 to 13 to review. I can't imagine being able to go through 58 and still keeping everything straight. Because even with just the 13, I found myself thinking back to other ones I'd read and starting to incorporate data and methodology, which is not what we wanted to do. We wanted these to be straight examples and say, okay, what was good and what wasn't?

And so I really commend you for, A, bringing it down from the larger number, even though the larger number would be interesting to evaluate, but to 13 what I thought were very good examples. They all had good points to them. I thought that you did a nice job in your presentation saying here's where I think gaps are because I think that you have some very valid

gaps, but it didn't aggregate the value of each of those analyses for what they were built for. They didn't necessarily meet the needs for the AAs here, but you weren't looking for that. You were saying, where are some good examples that we're pulling out from other sources, so that we can guide people?

I also thought this was a great exercise, to be able to go in say we know we're going to get AAs from various sources and we don't have that guideline that says you must fill out the form with -- here's our pre-filled numbers, yet I don't think we ever should. And I apologize for my constant use of we. It's just how I talk. I know it's DTSC. But I think by looking at it and saying, you know, here are ways we can view things, you're better preparing yourself for the future when various sources come in with different ways to express things and you've said, okay, there are different ways to understand that.

As Julie said, there's no right answer with this. There's a lot of black -- not a black of white; there's a lot of gray. And how do you say, well, you did your alternative assessment

wrong. And I think looking at these and the path you're taking is very well thought out and well done.

CO-CHAIR FONG: Well, thanks Mike.

Kelly?

CO-CHAIR MORAN: Well, this isn't going exactly how I thought it would, so this is interesting. I've got a couple of big picture comments and a lot of detailed comments. And I think I'm going to let this go around without the detailed comments to start with. So all -- these are kind of off the wall.

One, in terms of the survey, I have the feeling that people don't know what they don't know. There's a lot of people who think they know a lot of stuff and so they aren't recognizing that they need help with this. This is like Don Rumsfeld, the known, unknowns and, yeah, all this stuff, so -- but this is part of having a PhD. It's like you learn what you don't know and you realize that there's a whole bunch of stuff out there that you don't know anything about at all, and at least you learn how to say, I don't know that really well.

But I am expecting that as people start

digging into this that they're going to find that there's a whole bunch of needs that they have that they haven't really completely grasped. So I appreciate that the Department is taking the survey, and also thinking about other things at the same time, that that makes sense.

I think it's going to absolutely critical for DTSC to be evaluating the common tools. And this exercise -- and, Xiaoying, I just loved your slide where you were showing the common tools used in each of those areas, because I look at those tools and a lot of my more detailed comments are around those tools and methods that people are using and the gaps and problems that I see with those. And I think that really is going to be a key step because people are so likely to grab from each of those bins their approach, and maybe not always, but I think that's pretty common.

And so DTSC is going to need to signal pretty early on what the shortcomings are and how to be addressing those, or otherwise it's going to get AAs with those common tools with the same problems that we probably could identify tomorrow, maybe not today; okay?

And then I just have a whole pile of general thoughts on AA shortcoming. Most of those are around the deficiencies in the ECOTOX area that Becky mentioned that I think we should talk about this afternoon, and deficiencies in exposure around water, which I think we should talk about this afternoon, too, bigger than water, but all of the exposure stuff.

So I think I'll leave it at that and come back later on and raise those during the discussion.

CO-CHAIR FONG: Kelly, thank you.

Helen?

MS. HOLDER: I wanted to quickly second your opinion about not knowing what you don't know. When I saw the economics being slow, I said, they haven't done it yet. They think it's their internal cost only, and it's not their area of expertise. I guarantee that when that when they get in, that will be their number one area of concern.

Okay, so there were two things that I had to say about this, which was that -- just a reminder that any of these can be picked apart. Every AA that has ever been done and will ever be

done will have flaws and gaps. And so I want to make sure that we're safeguarding from perfect being the enemy of good here and making sure that we're -- what we focus on as we give guidance on how to evaluate, that we keep the North Star of the public health goals of the regs in mind. And this is not necessarily an exercise of trying to check every box all the time because I just think that that could really derail a lot of good work by doing that.

And then in the specifics of the AAs, I had a point that I just want to come back to in the larger discussion. In the printed circuit boards, flame retardants, the TV BPA, which several of us are fairly familiar with, there's a -- it shows that there's a shortcoming in the identifiable alternatives and screening. And I just want to talk a little more about that, because as I recall and as I went back and reread it, there actually is -- I thought that that was sufficient and was actually a fairly example of surveying what was available.

So -- and again, not to knit pick against the evaluation, but I'd like a deeper discussion about what those weaknesses were. And, you know,

was it because of non-chemical -- it's like, what was the logic behind it being slightly lower ranked on that? So I'd just like to come back to that later, if we could have the people who maybe had done that review would even be more helpful.

Thank you.

CO-CHAIR FONG: Thank you, Helen.

Elaine?

MS. COHEN HUBEL: Okay. Thank you. So I might, just after this morning's conversation or opening, just note that I am -- this is a public meeting. I am here from the U.S. Environmental Protection Agency, and I am here in my official capacity. I work in the Office of Research and Development. We do not do policy, so I'm really excited to be on this Science Panel. And my -- and although I am here in my official capacity, all my words and thoughts are mine, so what a treat you all are in for. No.

So this was a fascinating exercise and really, really important. And again, so I only just joined this Panel the last time around, so I'm still not caught up to where I need to be in terms of really understanding where your guidance has been. But just some things that jumped out

at me, just from looking at, you know, sort of this exercise and a couple of these different AAs. And then, actually, we've -- so then other jurisdictions are having not the same conversations because it's in the context in their particular legislation.

But one things that's jumped out a few times about trying to implement this kind of a thing in the context of chemicals' regulation is the need in these AAs for some kind of stronger problem formulation, where up front -- and I think this really -- this occurred to me, just everything I was reading and everything, you know, that I did delve into, this is going to be really, really -- this is going to be where your evaluation, you know, whatever it is that you put forward as your goals, which I think tomorrow we'll see, I think, really starting to -- you're starting to hone in on some goals that are a little more trackable. But your goals should drive the problem formulation for these AAs and would drive criteria for how you're going to evaluate your AAs.

And so, you know, where we're seeing

place that -- where there's some discomfort, maybe around exposure, relative exposure analysis, which I think that's another thing we're going to have to come back to, is what do you need in exposure assessment within this context and what you need in life-cycle assessment within this context, and which of those things are going to jump out and be very specific to the goals you're trying to achieve and the problem formulation for the particular AA, versus what kind of additional sort of scoping-screening analysis do you want to do that's broader just to make sure there's no show stoppers; right?

And I think that that -- I think you're like getting closer to really starting to articulate that. And I think after this exercise, it might be -- you know, it will be worth going back to the guidance and sort of thinking about that.

But those were sort of at the high level. Those, at the high level, were things that very much jumped out at me from this exercise.

CO-CHAIR FONG: Thank you, Elaine

Ken?

MR. GEISER: Yeah. This was a fun exercise, so thank you. I knew some of these alternative assessments, so -- but I knew them several years ago, so it was interesting to go back a couple of days ago and look at a couple of them.

I want to start off with a little bit of a comment from where Julie was talking about. And, you know, it's now been, I think it's 13 years since Torrey (phonetic) did the Five Chemicals Alternatives Study, and, you know, which at its day was a frontier kind of piece of work. And it is interesting to see how far these alternative assessments have come since that and how that was still -- that was a pretty simplified way of thinking about it, and we're now at such a much further development.

But just to remind Julie that, of course, the actually origins of an alternative assessment are way back there in the 1902s and '30s in engineering, and so it may be a little bit recycling that.

MS. SCHOENUNG: (Off mike.) (Indiscernible.)

MR. GEISER: Right. Yeah. Right.

Exactly. So it's a bit of that.

But also I think what I really what to focus on there is Julie's comment, and that is to again remind us why we're doing this exercise at all. And what we're really trying to do is help firms or enterprises to move towards safer chemicals, to get out of the use of hazardous chemicals in products. And we're using a vehicle, alternative assessment, as a way to structure a thinking process that allows people to get more creative and looser and more disciplined and organized in actually -- that's not my phone again, is it? It got it. Don't let me talk again.

And, of course, what we have here is kind of the plan that comes out at the end or the -- what the alternative assessment looks like, but this is kind of like an artifact of a process that went -- and where the process itself is, I think, the most important part. And the plan or the alternatives assessment is really just kind of a record of work. And what's really, of course, most interesting is what did somebody learn by doing the alternatives assessment?

And yet, at the same time, DTSC's effort

to try to bring together a group of what you might call the best of the best alternatives assessments and then try to see what we can learn from it, I think is really, really a good exercise. And I really thank you for all the work of putting -- you and your team, of all the work you did in doing that.

I'm going to be most interested at a certain point, and you did it a little bit, I noticed, in your presentation, but really just delineating, what did you learn by looking at all these? I know we're going to try to say a little bit about that, but I seems to me the learning process that DTSC goes through is really important, an important outcome.

I looked at four of these, I guess, and then skimmed a couple of others. And I'd just say, I guess given that Kelly said she wasn't going to go into details, should I go into details or not? A little bit?

CO-CHAIR FONG: Oh, yeah, Ken, please do.

MR. GEISER: Okay. Some of them were focused on alternatives assessments and products, and others were -- of chemicals in products but products, and others were of chemicals, and

products kind of was along for the ride, so to speak. And what was noticeable, I thought the ones that were really more focused on products than looking at alternative chemicals for the product, but also kind of alternative ways of doing like PERC in dry cleaning, or something like that. I thought those were a little better structured because the function was so directly related to the chemical itself, where they just appeared better to me.

I thought some of the things that I found were missing was sort of a statement up front about what the purpose of the alternatives assessment was, followed by a clear logic of why everything else followed from that. Some did mentioned the purpose. It was to find a safer alternative to NMP or whatever, but they didn't really follow it through and explain why they then used -- why the structured the alternatives, I think, the way that they did. And so I felt that was something that I learned by looking at it.

I think that what DTSC in particular has already added to the discipline, if you want to call it, is the identification of relevant

factors. And, you know, you see a list of factors and you wonder why those were listed and why some others weren't and things. But I think, you know, that's an important contribution that I think we're making here, that when you look at these, you don't see a very strong capacity to really do these.

I thought that data gaps in particular were not addressed. And either they just -- it wasn't mentioned what was missing, or there wasn't -- if they were mentioned, they didn't try to cope with what they did in order to overcome data gaps. And I think that's a critical thing, because going back to discussions that have already taken place here, any alternatives assessment is going to have places where we really need to know something and we don't. And that can sometimes be a critical and determining factor.

So noting the vulnerability of a -- vulnerability of a --

(Microphone adjustment feedback.)

MR. GEISER: Thank you.

Noting the vulnerability of an alternatives assessment to critical gaps in data,

I think, is important. And that's really important even more, I think, for what DTSC is doing because some of these were just sort of more, you might call, academic exercises or exercises to speculate about what might be a safer chemical for something. But in our -- in this case, in DTSC's case, whatever comes out of this alternatives assessment is going to have consequences, serious consequences. So either, if you don't explain your data gaps or you're making decisions based on information you don't know, it's pretty important, and it's pretty important to explain that in what we're doing.

I thought the life-cycle work, the life-cycle assessments that were in it or the life-cycle thinking that was in it varied a good deal. Some of them I thought were good, but some of them were just whole things were just -- it wasn't even noted. It was all about the point of use and what the alternatives were for the point of use, not looking at all at the production of the chemicals or the production of whatever alternatives were being considered, and certainly not looking at the disposal and all of the full range of possible impacts that would be there.

And the last thing, some of them ended with a kind of a display chart, color-coded display chart of, you know, goods and bads and benefits and positives and negatives, and then left the decision making up to whoever was the reader or whatever. In those cases where the alternatives assessment is tempted to really say this is the better alternative, I felt that the decision process was not explicated sufficiently to know how that actual decision was made. And so there were weaknesses, I thought, in looking at how the decisions -- (phone vibrates.) Pardon those. I'm trying not to be distracted here. My office just burned down or whatever.

I think that's the last point, was the decision making, I thought, was not detailed enough, certainly in the sense that Ann and others have worked on, and Tim have worked on, in thinking about protocols for really guiding decision making, which I just didn't see in these.

So there were a lot of things to see in it, and I thank you for the exercise. And I hope my comments were helpful.

CO-CHAIR FONG: Okay. Ken, thank you

very much. And don't worry about your phone buzzing. We knew you were popular, so, you know, it's expected.

Jack?

MR. LINARD: At least it's not ringing.

MR. GEISER: Right.

MR. LINARD: So I want to just echo some of the comments we've heard with some of my own.

Highlighting gaps is, obviously, going to be critical, addressing those gaps. But I think for me the most critical part is you have the infamous A to Ms. And to me, that is still the backbone of any AA that you're doing. That really gives you the structure that you have to address in doing any AA.

One of the questions -- and I focused on the three of the AAs because I have some knowledge of methylene chloride, PERC and NPE, so I looked at those in more detail.

The one question I came up with is I never -- I didn't see anybody actually address, why are we using those three in the first place? What is it about those particular chemicals that is the reason companies chose to use it?

NPE, I know incredibly well. It does

have some unique chemical in terms of how you make it, how it then decomposes. It also causes some major problems when it does decompose, but it's all the chemistry of that. And when you look at some of the alternatives, it's really important to note how you've addressed some of those features, but also addressed some of its problems. So I think that can help you along the way, what exactly are we -- we chemistry are we trying to replace? What is it about PERC that makes it so good? What is it about methylene chloride that makes it a great paint stripper? How do we actually characterize it and then figure out how we address that?

As part of that, I think just I want -- I think DTSC should always ask the -- any stakeholder, why do you use this chemical for this application? Why are you using it? It could be as simple as it's cheap, but hopefully there's a bit more of a scientific rationale for why you're currently using it. And maybe then you can get some insight as to how you actually then replace it.

The other thing is for certainly dry cleaning, PERC and NPE, you need to also consider

what you're trying to use it on, the substrate. I note that when you're talking CO2, dry cleaning, you casually -- there was a casual mention that it doesn't work well on some acetate. Well, you better know about the textiles that you're trying to clean because acetate is used in the lining of virtually all men's suits. So you can't then come out and say CO2 looks great, except it dissolves the interior of all men's suits. It just -- so you have to address that.

And same -- I mean, again, on the wet cleaning, I happen to be a firm believer that most things can be wet cleaned, but you have to realize, something like rayon, which always says dry clean, has nothing to do with the fact that it can't be water cleaned. It's just that when it's wet it loses all of its tensile strength and you can literally rip it apart with your hands because it has no strength, so the agitation is critically important.

So these are the little things you need to understand, is how do you go about addressing, why are you using this in the first place? What are the benefits? What are the deficiencies that

you see? There may be multiple solutions for an issue.

I thought it was really good on the methylene chloride. They used just downright sanding. I thought that was good. It may not be a chemical at all, unless you consider an abrasive a chemical. But you have to look at the broad field because, you know, one solution may not fill all different activities to use that chemical for.

So I think just don't be afraid to ask the stakeholders the question, why do you use this chemical? I think that's really where I come down to. I can go into long discussions of NPEs.

By the way, we saw, we as my company, saw a deficiency, I think somewhere around 40 to 50 years ago and we stopped using, but we found other ways to make up for the benefits that it had. And it took industry a long time to come up with something that was almost as good or equally as good, but eventually they did because there are certain properties that are really hard to match.

The only thing I was disappointed in, in

looking at, say, NPEs is they sort of lumped all surfactants as equal, and they're not. It is there for a specific reason, which is why I sort of harp on that one, that there are certain benefits that it offers that we have to also recognize when replacing it. And like I said, I'm not arguing it needs to be replaced. I think data has shown that it -- you know, we don't need it. There are alternatives, but you have to broaden your mind and ask those questions about exactly what is it -- what performance attribute are you really trying to replace.

CO-CHAIR FONG: Jack, thank you.

Kelly, if it's okay if I make my general comments before you go into yours?

CO-CHAIR MORAN: Yeah.

CO-CHAIR FONG: Well, first of all, just amazing work. I mean, going down from whatever, 58 down to 13 and understanding, you know, the analysis that you guys went through to make that selection, and just really amazing work.

In terms of -- so when I was reading through the 13 AAs, one thing that jumped out to me, you know, when you guys were asking us about potential strength of the AAs, one thing that

really jumped out at me was something that, you know, Ken and Jack was referring to is actually -- well, I think there was, among the 13 AAs, there was not enough emphasis on how difficult it is to actually implement the solutions. Even in situations when they have made a decision about which is a better solution or a safer chemical to use, it's not enough information about implementation of the solutions.

I mean, just because something might be safer or it's a better alternative, is it actually possible to introduce that into a product or replace something that's desirable? So I think that's one thing that really jumped out at me.

And so along the same, you know, train of thought is that, so if you look at the AAs, I thought those AAs were good, but they were probably much better for the product design stage than the replacement or substitution stage, where you don't have to -- where, you know, you have much more flexibility in terms of introducing a safer or more desirable alternative or solution, whereas, you know, during the replacement and

substitution stage there are a lot of things that you have to take into consideration. And, you know, one of the things that Helen pointed out is the economics of it.

So again, I think when I was reading through the AAs, I thought, gosh, these are really good, but how do we start introducing these concepts to product design as much as, you know, replacement or substitutions later on?

And then another point that Ken made that I want to emphasize, it's about not just the point of views, but various different aspects of LCAs.

So the one AA that I'm very familiar with is the tetrabromobisphenol a and their printed circuit board from the EPA from the EPA study that Helen mentioned. So if you were to look at the results and look at the charts comparing the different -- comparing the, you know, tetrabromobisphenol a to the different alternatives, if you were to look at their, you know, different hazard endpoints, actually, the chemicals that they wanted to replace tetrabromobisphenol a, in fact, looks pretty much similar to the other potential or possible viable

alternatives. But what maybe sets tetrabromobisphenol a apart, it's due to the fact that one of the end-of-life ways of handling printed circuit boards, it's open burning in developing countries. And during that process, polybrominated furans and dioxins are generated. So if you were to just look at the chart comparing the hazard endpoints of Tetrabromobisphenol a to the alternatives that the group came up with, they look about the same.

So I think this, you know, Ken's point about additional focus, not just on during product use or potential exposure to the concerns, I think that's a really important point.

Let me turn it over to Kelly and --

CO-CHAIR MORAN: All right. So I'm going to pick it up from here. I have to admit, this first round of discussion was much more high level than I was expecting. So now what I heard here were I think four things that might merit discussion; deficiencies in the ecotoxicity analysis, guidance on exposure assessment and that whole exposure assessment issue and how that's done, identifying alternatives for

screening -- Helen had a specific question; maybe we can even answer some of these questions today, I assume, and I'll circle back to that -- and Elaine raised strengthening problem formulation, and I think that's something that would be very helpful to talk about as a group and make some recommendations in that area.

Are there other things that you all heard in this first round that staff would particular like us to talk about? And then I'll also ask everyone here that same question.

But I'll start with Meredith or Karl. Do you have anything right now?

MS. COHEN HUBEL: Not really, just Elaine's idea about problem formulation I thought dovetailed nicely with Ken's observation.

CO-CHAIR MORAN: And Ann?

MS. BLAKE: I'm not sure if this is a problem formulation issue or not, but in the more detailed comments that I wanted to make at some point, there's two issues that come up, sort of at opposite ends of the process. One is scoping the AA, and maybe this is a problem formulation standard in such a way that you can actually give a non-chemical alternative, so a materials shift,

a different design approach.

And I'm thinking particular about the antifouling paint. They looked at different kinds of paint, but they didn't look at potentially thinks that prevent biofilm from forming or the structure of the boat itself where you can make a micro structure so that microbes just don't stick, and that technology exists. I mean, it has not maybe applied to boats yet.

But -- and then the other end of the exercise was what was -- I was reminded by, also in the antifouling paint, the tox services approach is the caveat of what decision -- you knew I was coming after this one, right? -- your decision process and how you go about it and the fact you get -- that you get a different answer, that you get these three different overlapping subsets of answers in that particular choice depending on how you structure your decision making. So I think that's key that we start to provide some guidance around that and what we consider to be an acceptable outcome.

CO-CHAIR MORAN: Other -- oh, Julie?

MS. SCHOENUNG: I'm going to take a little tangent here, but I need a clarification

as to the purpose of the guidance we're giving right now to DTSC. I mean, there's the AA Guidance document that's been developed. There's an effort to better understand what will be an acceptable AA from companies or firms that are submitting. But there's also, I think, the question of what to give as the publicly available -- where to send people for examples.

So as we are going around here, I mean, we need to talk about the details of what's a good AA, what's a bad AA, et cetera, but I wanted to clarify what you are really asking us to give you guidance for? Is it to evaluate these 13? Are these a good starting point to send people to if they are starting to figure out what an AA is? Or are you trying to continue to modify the AA guidance based on these examples? Anyway, I just -- I felt I needed a little more clarification.

DR. WILLIAMS: So not to be flip, but the answer is, yes.

So I think we're trying to do a couple things. First of all, we want to make sure stakeholders have some resources that go beyond the guide and points of reference for this is

what it looks like. Okay. So you'll notice in the way that we did this, we didn't put minuses on this table; right?

We put pluses saying it's either there or it's there and we think it's relatively strong. We did not -- we specifically did not critique these and say this is lousy in this area, and that's not really what we're looking for from the Panel in general, except that when those observations are made, that means that perhaps the Department needs to, in their role as a member of the community of practice, have that discussion with other people who are implementing alternatives assessment and say, hey, we're seeing a lack here and what can the community of practice do to strengthen that particular area?

So that's a more -- that's kind of a longer-term need that the Department -- and a benefit of this discussion would be to start to identify those things that we should be taking back to the community of practice and having them be addressed. The near-term vision was that we start to post examples that say this is what it looks like when you address a particular requirement in the regulation effectively, so

it's multilayered.

CO-CHAIR MORAN: Mark?

MR. NICAS: I just had a question.

CO-CHAIR FONG: Mark, would you put on your mike please?

CO-CHAIR MORAN: Oh, sorry.

MR. NICAS: If you're providing an AA as an example, right, so other people saying, well, here's an example of an AA, I mean, you just can't have a bad example; right? So there has to be some evaluation that you did, right, about what -- so to go the question, are you asking the Panel to give your comments on the adequacy of these particular AAs that might be used as examples or do they need to be modified? That's --

DR. WILLIAMS: I think the intent was the use of these AAs in particular areas, so not necessarily the AA as a whole, but does this particular AA do a good job of the life-cycle thinking? And could we point readers to that particular area, as opposed to the overall AA?

CO-CHAIR MORAN: Well, with the caveat that you all didn't actually -- you said this one is strong in this area, but you didn't actually

compare it to the regs or assess it for completeness?

DR. WILLIAMS: Not in --

CO-CHAIR MORAN: Yeah.

DR. WILLIAMS: Not with that level of detail. And that will continue to be something that our stakeholders ask for. That wasn't this exercise. And maybe we can take some actions out of this exercise that would help us take that next step.

CO-CHAIR MORAN: So, in fact, that's one of the things we should be making recommendations on, so --

DR. WILLIAMS: And the Panel before suggested that we find or, you know, take the leadership in developing AAs that meet our requirements, and that's still something we talk about and we think about and I think it would be good to have more discussion around that.

CO-CHAIR MORAN: Okay. So that does take us to that list of questions here, so I might even ask some of these questions.

But Helen has hers up, so we'll do that first. And then I'm going to come back to the questions in our background document.

MS. HOLDER: In the topics that you were teeing up for discussion, I just wanted to make sure that we were going to address modeling, what a decision justification would look like? Because it's a very big gap and there's a reason for the gap, as all of us who have worked on these before will tell you.

Part of it is that we often feel like we cannot make a decision at the end of a recommendation, at the end. But more often is that we shouldn't because, at least in some cases, the body or the group that's working on it can't approve something in case they might be wrong. I've seen that actually happen many times where they don't actually want to commit if there's a data gap or whatever because they're kind of afraid that someone's going to come back later and pick apart their work, I don't know, like maybe we are here. So -- but I think that by modeling what it would look like, because there's not a lot of exemplars, there just aren't. And so -- I think we need to talk about what is a good justification and, you know, hopefully not 500 pages of that either.

Thanks.

CO-CHAIR FONG: Helen, when you talk -- I think you're talking about publicly-available AAs; right? Because you and I make decisions all the time, even in the face of data gaps.

MS. HOLDER: Yeah. I mean, definitely. But even so, even internally, you know, because we have to sign our name on it, I've made engineering decisions, not necessarily environmental ones, where I was hesitant because I had some -- a lot of uncertainty around it, so I totally get it. You know, I'm not being critical of the groups that did that. But I think that going forward, we need to help people because this might be more commitment than people are used to.

CO-CHAIR FONG: Absolutely.

MS. COHEN HUBEL: It's hard not to get excited about everything. If we're raising that topic later, then I'll just hold -- oh, well, no.

You know, I mean, I think to me this -- there's a lot looped in here in terms of what decisions you're wanting the applicants -- the submitters to make, versus what DTSC is going to do with those AAs in terms of next steps that you'll potentially require. You know, Art's

point about are the AAs sort of -- well, you made this point about these are the types of -- this type of thinking would be of tremendous value. And I think what you're trying to even stimulate is people to be thinking about these things as they're -- you know, you're really trying to change how people, design, develop, produce products; right? I mean, that's the ultimate goal.

And so this process is -- you know, what about this process moves you in that direction, versus just stimulates people to say, oh, my god, something's on the list, pull it out, move on; right? Because that's kind of -- I don't want to use company names, but that has sort of been the effect of, you know, particular other activities where these compounds won't be put on the shelves, so, fine, we'll reformulate, off you go; right?

So I guess this concept about which decisions are being made where, what do you want to see in the AA, is the goal of the AA to sort of start and initiate this thinking or is -- and anybody who's in industry or seen examples of what happens when industry really does decide

they need to do something different and the levels of, you know, development and, you know, R and D that have to go into, you know, can -- okay, this looks like a good alternative, but now we've got to do, you know, six months to eight months of, you know, production-types of experimental work to even get us there. So is that -- you know, are you wanting to see that done here? I don't think so.

So, you know what, I guess my point is that these decision things are really important and sort of the -- and I know that's not part of -- okay.

DR. WILLIAMS: So one of the things that has to happen when a responsible entity submits an alternatives analysis is they have to tell us how, if they have a preferred alternative that's different from the one that's already on the market, they have to tell us how they plan to implementation it. And so there is some expectation that there's a roadmap for, hey, we think this is the preferred alternative, but we intend to do two more years of, you know, design, retooling, scale-up, those kinds of things.

And I always look at REACH as the

example, but when an alternatives analysis is completed and then they make a determination around that, that you typically associate a time frame for when that would be, when the actions that the company proposes would be complete. And they may say, okay, there is not alternative now, but we're going to revisit it.

On your other point, though, about where the decision making is made, so Karl always says show your work; right? And we do expect them to make a decision, right, just saying this is the alternative that we intend to move forward with, and we expect a lot of transparency around the basis for the decision.

MS. COHEN HUBEL: So I guess, you know, what keeps coming to my mind was the example that we saw, I can't remember who presented at the CMP meeting, but the example we saw where, you know, they had -- you know, they went through four different alternatives in quite a few months. It was a really very R-and-D-intensive process, even to get down to something where they could say, okay, I think, you know, I think this might be the alternative. And you are sort of anticipating that that level of investment would

go into what's delivered to the --

DR. WILLIAMS: There's a timing issue, right --

MS. COHEN HUBEL: Yeah.

DR. WILLIAMS: -- that could --

MS. COHEN HUBEL: Yeah.

DR. WILLIAMS: Yeah. No. So it could be that that's not feasible within the time frame at hand. They could come back to us, and there are provisions for extensions if they're needed. But there could also be we think this is the alternative and we need two years, and then we start a conversation; right? So for instance, in a lot of cases our regulatory response is not going to be generally applicable. It's going to be very specific to a manufacturer. It's going to be a consent order. It's going to be negotiated. And we're going to have to take all of those factors into account when we make our decision.

MR. PALMER: Yeah. I just wanted to -- I'll be the -- just a reminder on the regulatory nature of this is that we often find ourselves checking the conversations to make sure people understand that going into this, we don't have a

predetermined outcome. We're not trying to get below a threshold. We're not trying to say if you don't do X, Y, Z, we're going to ban -- we're going to implement a ban or restriction. It's really you have to go through the whole process.

And this, I think, adds the weight to your problem statement, identifying what is the problem that we're trying to -- we want you to explore, and that might have a myriad of different outcomes. And it may be that at that time it's not feasible to, you know, do plug-and-play with a different chemical or something. But we -- that burden is on the manufacturer to say where they are, what they've done, and what are some of the things that they're recommending to do to make the product safer? So that uncertainty makes people very nervous.

But I think it goes back to this, what's the problem? And when you go through all these criteria, however deep you can go, where does that lead you? And that's what we're asking people to tell us what they're committed to, and then we have the checks and balance, if you will. If that's -- if we're not convinced that that's approximately, then we have that menu of

regulatory responses.

But I want to encourage people that, yes, everything from the comprehensive, you have to look at all of these things. You may not have all the information, but it's the process. It's back to this process which is super important, and it's important for us to see that transparently, and the thinking. And that's a very different thing than most people are used to from dealing with the regulator side.

So anything that you could do when you look at these examples that highlight how someone actually did a good job or fell short of defining the problem, or in any one of those elements did a really good job or something that could be transferred or as a key learning that they might have had, that's something that we want to capture. Because, frankly, one of the challenges we have is really explaining the regulations and the process to people. We're always going to have data gaps, but it's how you do it, which has been important.

CO-CHAIR MORAN: All right. I want to bring this back around and see if -- we have ten minutes until lunchtime and I know folks are

hungry, so we won't go past noon. But I did hear kind of enveloped in some of these comments that some folks didn't necessarily agree with the staff ratings. And I think Becky, Mark and I were all expressing concerns about how exposure was handled and how ecotoxicity was handled. So I want to be explicit and inherent in my comments, is that although we see some three pluses for hazard screening, I don't think that's an accurate rating when it comes to ecotoxicity on most of these examples, with a couple of exceptions.

So I want to check in. And I think Mark's kind of expressing that same thing here. So I -- but I want to check in explicitly. And so Helen had a question on one of them, and I don't know if Xiaoying can answer it.

But let me just go around and see, does anybody else see any other places where they disagreed with the staff ratings? Because I want to call those out for DTSC staff. Just go ahead and put your card up and you can just talk, so, yeah.

MS. BLAKE: I think I just want to go a little deeper on your ECOTOX. I totally agree

with you on the ECOTOX piece. So it's not specifically on here, but I looked at several -- or re-reviewed several of these that I hadn't looked at in a while. Particularly where they impact aquatic toxicity, we need to have a much more robust piece, some tools developed around that because I think that's missing. Specifically, and we're going into to the Work Plan criteria, but specifically when we're targeting impacts on water for California, and that's going to become more and more critical as we get less and less water, aquatic toxicity specifically with an ECOTOX needs to have a more robust structure around it.

Does that make sense?

CO-CHAIR MORAN: Yeah. My comment is actually broader than aquatic, but --

MS. BLAKE: Yes, I know.

CO-CHAIR MORAN: -- point made. Yes.

MS. BLAKE: I knew it would be.

CO-CHAIR MORAN: So anybody else -- so did anybody else look at anything where they disagree with the staff rating in any of these areas?

And, Helen, can you ask your question

again, and maybe Xiaoying could answer it? You had a question about a specific one where you thought that the, yeah, that the alternatives was done properly, so identifying alternatives for screening. And you had identified one where you thought it was done well and the staff hadn't rated it well..

MS. HOLDER: Yeah. Just whoever has looked at this case could help me understand why that was a weak as opposed to a strong, that would be really helpful.

CO-CHAIR MORAN: Which case was it?

MS. HOLDER: Oh, sorry. It's the EPA printed circuit board flame retardant, TBBPA.

MS. ZHOU: You look at me? I don't know whether I can recollect my thought, but I'm looking at my team members just for confirmation.

I think this one, actually, maybe we first reviewed to put like strong cases. And because it's identified not only -- it's -- let me restate it -- because it goes through partnership and identifies different alternatives.

But in the second round review it's kind of downgraded. And it may be because in their

report, they kind of shortly referred to survey but didn't put much more details on it. That maybe makes the whole support information not sufficient enough.

But I couldn't really -- another reason might be downgrade is maybe only considered chemical substitution, but not others.

So that might be two reasons why it caused downgrading. But I'm looking at Suzanne.

MS. DAVIS: I did look at it in the first part. And I did think that the discussion on the alternative, the chemical alternative was very good. And actually, I was kind of impressed that the researches had actually gone one step further and did some actual testing on the printed circuit boards and the impact of burning, so that was why I thought it was pretty good.

But as Xiaoying mentioned, we didn't really see any other alternatives mentioned, just the chemical ones. But I do remember, there was a very robust discussion on, was it 40-some-odd different chemical substitutes.

MS. HOLDER: Right. That's why I'm asking the question.

MS. DAVIS: And it was actually filtered

down. So it's kind of the difference maybe between reviewers.

MS. COHEN HUBEL: So let me ask the question this way. How would you -- what would make it be a strong one from the way you were doing the rubric? Because if they had put like one sentence to say non-chemical alternatives include not making the product? Or, I don't know, it's like --

MS. DAVIS: Right. Yeah.

MS. COHEN HUBEL: I don't know. It's like if they had had even just like one nod as to why it was chemically focused, would that -- I mean, I guess I'm just trying to understand.

MS. DAVIS: As part of the regulations for the definitely of the alternative, there's four different types. One is the removal of the chemical concern, and also not replacing it with an alternative. But then the second one is, you know, you've replaced the chemical of concern, or you try to reduce the concentration or look at how you could minimize impacts at the end of life.

So, yeah, if there's just a sentence of two just explaining that those were considered

and not included, for me, that would be enough. But that's one of the things I think the AA Team is trying to refine as our criteria and the approach that we're using in evaluating.

MS. COHEN HUBEL: Yeah. And I think that, you know, going forward, this actually to me, like I said, was actually a stronger example. So if we think that some modifications would make it stronger --

MS. DAVIS: Right.

MS. COHEN HUBEL: -- just even if it's like two sentences would all of a sudden pop it up, because they really did look at a lot of things.

MS. DAVIS: I know, they did.

MS. COHEN HUBEL: So it's like that would be actually helpful --

MS. DAVIS: And I think --

MS. COHEN HUBEL: -- for other people making these --

MS. DAVIS: And I think this is what Xiaoying was mentioning is one of those two pluses instead of a plus, that this was actually stronger, wasn't -- I mean, I think in general, I notice the function portions or the performance

and function discussions are usually fairly strong. We always like to see a little bit more, but that's just us. And I mean, but yeah. And it's something we can think about. And if you've got some examples that you can provide us, we'd be more than happy to look at them and see if we can't somehow incorporate.

MS. COHEN HUBEL: Yeah. No. I guess it's just that --

CO-CHAIR MORAN: Thanks.

MS. COHEN HUBEL: -- I would have used this as an example, actually. If I hadn't seen this one, I would have actually used that one as my example.

CO-CHAIR MORAN: So maybe there can be some follow up offline --

MS. COHEN HUBEL: Right.

MS. DAVIS: Right.

CO-CHAIR MORAN: -- to clarify that. And I think that's part of the message here is where something didn't get -- it got one instead of three, I think what DTSC might be hearing is that it might be a good idea to clarify why it wasn't a three.

MS. ZHOU: Yeah.

CO-CHAIR MORAN: Yeah.

MS. ZHOU: I think I also want to add, for the real AA reports there's also additional specific regs and requirements for that part, like they have to consider those alternatives we put together on the DTSC website. So, for example, in the profile, if you find that those alternatives are already being included in that profile, so maybe some sentence on why you think that's not feasible and will be -- make it also strong. So there's some other nuances there.

CO-CHAIR MORAN: So I think we're good on this for right now.

So, Ken, you're last up. You got 60 seconds.

MR. GEISER: No, I think Karl.

CO-CHAIR MORAN: Oh, I'm sorry, Karl, and then Ken. Ninety seconds.

MR. PALMER: Thank you. Real quickly, I just wanted to highlight, I think this highlights -- I know Helen always flinches when I say, tell us your story, but it also -- you know, we don't know what we don't know. And what you know in your industry, whoever you are, you might take some things for granted that we don't know.

And as the reader, it's very important to give us the context. And there may be two sentences that you can provide saying only an idiot would consider this. Oh, okay. Something like that.

And the other thing I would stress would be that -- and now I forgot it, but it was there a moment ago. I think of it later, but --

CO-CHAIR MORAN: We'll go to Ken and you can --

MR. PALMER: Yes.

CO-CHAIR MORAN: -- you'll have 30 seconds to remember it.

MR. GEISER: Good. Thanks. I've got my phone in my pocket, so we're good.

I actually only did half your exercise. I sort of went through these and looked at them in regards to what I thought was strong. I didn't go back to the table and do the question you're asking now, which is how accurate do you think these are? But the little that I was able to on the at least three of them that I kind of read in more depth, it seemed pretty close to being accurate. But I do look at the table in an interesting way, now that I understand what Meredith's directions were, and that is there are

no minuses. So a gap or nothing there could be that there wasn't much there, or it was a disaster on that issue, and it's unclear.

So when I was kind of going through it and saying this seemed weak, that seamed week, I think I was speaking more to what must be not said by the gap, by not having something there.

But it is interesting and probably almost too obvious to say, but it's interesting that you rate it almost nothing, none of them, on relevant factors, which I think speaks a little bit to the thing I mentioned, which is I think this is an innovation that DTSC has really pushed forward.

But also the economics, you only gave any credit to a few of them, and even then very weak. And I do think, and I heard, I think, Helen said the same thing, the economics were -- the analysis, I thought, were weak.

So just some comments.

CO-CHAIR MORAN: So I think to wrap up the morning, so there was an action item out of that discussion about a recommendation to DTSC that where it's not three and it's not blank, perhaps that DTSC might provide a little bit of

clarification as why it was downgraded, that that would actually be really helpful for people looking at these examples. So that's what the group seems to be recommending. Whether or not DTSC wants to do that, we make recommendations, they decide.

But -- and other than the ECOTOX, particularly aquatic tox, but also, I would say, non-aquatic tox, and exposure, and this one question, my sense was I think the sense of the group was that DTSC had done a fair job evaluating these, so that's a really important conclusion. So basically, we've got some quibbles over some areas. There are some places where we think -- and we'll see how much we can get through this afternoon -- but there's some places where we have some recommendations that we're going to develop through some discussion this afternoon. But in general we think that staff are on the right track and identifying examples that are stronger, so that's helpful.

And I'm going to let Julie go, but it's -- we're after lunch, so it's going to be very brief.

MS. SCHOENUNG: I think one thing in

terms of asking DTSC to go back and explain the single pluses is maybe a big task, but to me it's -- what I'm hearing is that in some cases it's just because the regs are very specific in what needs to be in the AA and these -- maybe that AA didn't address what would need to be done if you were following the rules of the regs, as opposed to they kind of did a weak job of doing that part of the assessment.

So one is are they following the rules? And the other is, is it methodologically sound? And maybe that's an easier thing than providing an open-ended comment for each of these, but just highlighting where it's -- you know, this wasn't written as a response to the regs and therefore it didn't abide by all the things we need for it to meet the rules of the regs, or it's just been done, you know, it's not very robust. Those, to me, are two different things. So maybe that will --

CO-CHAIR MORAN: Yeah. And I think --

MS. SCHOENUNG: So maybe, as an academic, I'm used to trying to do binary evaluation decisions instead of open-ended assays, so --

CO-CHAIR MORAN: Yeah. And that's a

really good point for DTSC. I think DTSC has done an excellent job of communicating that here in the room and to us, that they're looking at AAs that were not created for these regs and saying are they examples for this part or that part? And we aren't critical of the preparers. A lot of these folks did an amazing job in the context they were doing, all the work, in fact. I think all of these examples have some pretty amazing stuff in them. So that's just to -- I think that's pretty clear.

And we're going to be super brief because we are going to lunch. And I encourage folks, you can't talk to each other but you can talk to staff during the lunch break if you have some minor follow up that you'd like to do. Well, you can talk to each other, but not about anything that we're -- that's in front of us because --

DR. WILLIAMS: Which is why I'm directing --

CO-CHAIR MORAN: -- that would violate Bagley-Keene.

DR. WILLIAMS: -- this to you, Kelly.

CO-CHAIR MORAN: You can have lunch with each, just not --

MS. BLAKE: So just a clarification.

CO-CHAIR MORAN: Okay. Very, very brief.

MS. BLAKE: Yes. The clarification is that I totally understand, this needs to be more robust just on ECOTOX generally. I meant aquatic tox when the chemical -- the chemical and product in question actually impacts water directly, so a specific endpoint.

CO-CHAIR MORAN: Absolutely.

So remember your Bagley-Keene obligation. We are not allowed to talk about items on our agenda or in front of us informally, so we're doing that here in front of everyone so it's public. But we can have a lunch conversation on other items. And the Panel the meeting will reconvene at 1:00; is that correct? Yes. Okay, at one o'clock. So eat fast. See you at 1:00.

(Off the record at 12:05 p.m.)

(On the record at 1:04 p.m.)

CO-CHAIR FONG: At this point we're going to continue our Panel discussion on the AA examples. And the two topics that I want to cover during the first two hours of our discussion, the first one is going to be on deficiencies and ECOTOX, and the second topics

will be related to exposure assessment, so we'll, again, continue with our ongoing discussion on the AA examples.

So I'm going to ask the Panel Members if they have comments related to ECOTOX to put up the name tents.

We'll start with Kelly.

CO-CHAIR MORAN: Yeah. And I want to thank our -- we made a list of, I think five topics to discuss in this next 2 hour and 15 minute period. And because I've got some substantial comments on the ECOTOX and exposure area, Art's Chairing this part, and then I'll take over and Chair the rest. So our topics after ECOTOX and exposure assessment, we were going to talk about strengthening problem formulation, including the idea of scoping so that a non-chemical alternative could be selected, and the decision making process.

And then I have on this list, identifying alternatives for screening, but I think we kind of covered that. Is that -- okay. So we can see if we want to get to that or not.

But so we're trying to cover four topics in this 2 hours and 15 minutes. And I'm somehow

suspecting someone will come up with something else before we get to the end of this time. Okay.

So with that, I'm going to switch into making some remarks on ECOTOX. This is a theme that has been one that a lot of folks have heard me talk about for a long time, and so I'm going beyond the assessment that DTSC did in the sense that I'm thinking about deficiencies in the standard approaches because it's an ongoing theme. And I have seen over the years that I've been going to meetings and saying ECOTOX, ECOTOX, that there have been some improvements. And so I really want to acknowledge that the folks who have been working on these standard methods are listening and hearing and making changes. So it's a moving target and that's good and we're moving towards the place we want to be.

But I did want to raise these things because I think that our law is pretty clear that the goal of this program is not just to protect humans, but also to protect the environment, and defines the environment very broadly to include all kinds of organisms and ecosystems, and severe impacts, as well as widespread impacts. So

that's very important when you're talking about different kinds of organisms.

So sometimes that means decision making processes, like those based into GreenScreen, don't work very well in the California context because they favor humans, and also not in the context of some products like marine antifouling paint, you know, where the first marine antifouling paint looks all prioritized to human exposure for those two days that someone's either painting or stripping the boat and not the aquatic environment exposure for the five years in the middle. So that's something I think we're all keenly aware of and I probably don't need to address further.

More importantly, a lot of systems tend to focus on a particular species. So they say, we're going to, particularly in invertebrates, we're going to use daphnid data and a certain kind of algae data, and there's scientific reasons that that is not a robust way of doing things. So different species are sensitive to different chemicals. And the species sensitivity distributions, which I think I've tortured some of you with in the past, tend to cover several

orders of magnitude of concentration between the most sensitive aquatic organisms, or like aquatic invertebrates as a class, and the least sensitive ones. And so the idea that one can pick a particular species and use it to benchmark across chemicals doesn't work because some chemicals are particularly toxic to daphneds and others are not, but other kinds of species, chironomids, for example, or another group of exotic invertebrates can be a lot more sensitive to a particular chemical.

So it's a fallacy that picking a particular species as a benchmark works. That just totally doesn't work. And at off times there aren't any data, so we're using predictive methods, or the only data available are through daphneds, and I totally get that. But it's important that where there are multiple aquatic toxicity data points, that the lowest values be used, not the ones for the species that happens to be written into the methodology, like daphneds. So that's just a scientific gap.

I really also feel like there's not that much we can do about it because the datasets aren't that rich. But aquatic invertebrates in

particular seem to be very sensitive to a lot of chemicals. And in my professional experience, I'm finding that invertebrates are most often the class that's most sensitive to whatever the chemical is of interest at the time. And they play a super important role in the ecosystem. There's actually whole scientific papers about -- there's one I call the Ode to Invertebrates that explains the story of how they're food for fish and birds and effect higher organisms in the food chain all the way up. So if you effect aquatic invertebrates, it has a cascading effect on the entire ecosystem.

So invertebrates really do need to be thought out about a bit more. And that's a challenge for us scientifically since there's so little data. But a lot of people just do a fish test, and I'm almost feeling like we should just be doing invertebrate tests first because of that pattern that I've seen, at least in my professional experience.

A second theme is around what organisms. So people are using aquatic organisms as the sole environmental endpoint. So nobody's thinking about plants. Nobody's thinking about birds.

Nobody's thinking about amphibians. They have very different toxicology profiles to mammals and to aquatic organisms. Once again, big data gaps. But this is a real challenge for us. We're being challenged by society to make products that are going to be safe in all of the ecosystem and not just the aquatic environments and humans. So again, I'm just kind of, at this point, throwing that out there.

But there are examples where there are species-specific information out there. And so the trick is to structure our process that's to encourage people to at least take a look, is there anything else out there, is there some special hazard known?

I often tell a story of molybdenum being toxic to cows. So molybdenum used in a cooling tower, the blow-down is discharged to a treatment plant. It gets into the sewage sledge which is then spread as fertilizer on a field. And then it's used for grazing. This is a very common scenario. You can have too much molybdenum and that effects the health of the cows because cows and other ruminants are very sensitive to molybdenum concentrations.

So that's a known hazard. There are probably many more things that are unknown. But where there's a known hazard, we need to try to find a way to make sure that our process identifies at least the known hazards.

The third issue that relates to ECOTOX, but it's more broad, is degradates. I love that Safer Choice and EPA in general in its pesticide work, too, is thinking not only about the chemical, but they're trying to predict the degradates and whether any of those degradates have the potential to be toxicologically important. And that's something that is super important in the ecosystem because things do tend to degrade in the environment where other kinds of organisms are exposed, perhaps more than humans. That's also in the it's very hard class. But I think that the tools and methods are out there for a lot of chemicals. I have been so impressed at how much EPA has been able to standardize the work in this area.

Let's see, persistence and bioaccumulation are not -- they're really important factors. They're not eco hazards. And the sooner that people just start thinking about

environmental fate as a broader thing than just eco hazard, the better, from my point of view. That's -- but I think I'll come back to some of that stuff under exposure.

Let's see, oh, the last one is differentiation. So another thing that is really going wrong, particularly in aquatic hazard assessments, is that all of -- people use the GHS system for toxicity rankings, and so a huge fraction of chemicals fall into the highest ranking. So it's -- for acute, that's under one milligram per liter is the lowest toxicity, and for chronic it's under, I think, a tenth of a milligram per liter.

So aquatic toxicity, so many chemicals at toxic at that level that everything ranks the same. And so you're not differentiating the chemicals when you use that approach. I'm seeing other systems where there's a further degradation that's below like at a microgram liter -- per liter or below, and I think that makes a really big difference.

And the reason for that is if you just look at data in terms of incidents of aquatic toxicity as linked to chemicals, most of the

chemicals that are important environmentally have an acute or chronic toxicity in the microgram per liter range or lower. So those things that are up towards a milligram per liter, you don't often get a chemical at a milligram per liter in surface water or, you know, an aquatic environment, but you often do get chemicals at the microgram per liter and sub-microgram per liter concentrations. So chemicals that are most harmful there to aquatic organisms, we need to really highlight those, and therefore we have to segregate out those things that are less important for those things that are most important, because otherwise we're grouping them all in the same and there's actually a very significant difference in potential for causing impacts.

So that's my set of thoughts in this area. This is all more aimed towards the future and what we can do to fix the methodologies that are out there. But I think it's exceptionally important that the Department be signaling the kinds of things that it's looking for to improve methodologies that are out there for people to address in their AAs so that we don't receive a

series of assessments that contain known deficiencies that can be addressed.

CO-CHAIR FONG: Kelly, thank you very much.

Let me just follow up on the part about perhaps lighter emphasis on aquatic tox and ECOTOX in the AAs that were included in the DTSC's set of AAs.

You know, I've heard the argument or people make the point that the reason why certain aquatic tox may not be emphasized in AAs, due to the fact that when you're talking about chemical manufacturing, that there is, through engineering and administrative controls, there's control over direct discharge into the air and aquatic environment. So I wanted to hear your comment on that.

And the other thing about, in terms of, you know, the most sensitive species when it comes to aquatic tox is that I think, you know, that's definitely something that people are recognizing. Because the GreenScreen is actually, you know, when you're doing a GreenScreen on the aquatic tox, it talks about selecting, you know, whatever is the most

sensitive in terms of an indicator and in terms of not limiting to aquatic species but, you know, other things like land and/or birds. I think that's also, again, something that people are recognizing the importance of because the GreenScreen, and also other hazard -- comparative hazard assessment tools, like Scivera, are looking into aquatic -- I'm sorry, ECOTOX in terms of effects on land animals; right?

So you hit on some just excellent points. And again, I think that those are points that it's gaining more and more traction and people are recognizing the importance of trying to understand that better in the AAs. And so thank you very much. Again, excellent points.

CO-CHAIR MORAN: So just to address your first question on the controls on aquatic, I'm actually going to hit that under exposure. Because I think one of the greatest deficiencies in people's assessments of exposure is they don't recognize those pathways to water. There's all these indirect pathways to water. We find these chemicals in water and they are actually knowable and explainable, so -- but let's talk about that under exposure.

CO-CHAIR FONG: Okay. Becky?

MS. SUTTON: Okay. So I want to second all of Kelly's comments. They're all really great. And then make a couple little add-ons.

I really like the idea of signaling to the regulated community, and to scientists and agencies, et cetera, that we need some more of this information, or it would be ideal.

But I also want to note Helen's point of not letting the perfect be the enemy of the good, because some of the things I'm going to bring up, it's mostly going to be more data gaps; right? So we just -- we don't have all the info we would like.

Okay, on aquatic toxicity, most of our work is on freshwater organisms. So, of course, I want to make the pitch that we also include the marine organisms. And I was really excited when I read the EPA bisphenol a and thermal paper example to see at least some marine fish. You know, no other organisms, but at least there was a marine fish in there.

I've read the EU guidance for developing thresholds of concerns for pharmaceuticals. And that guidance is actually particularly cautious

when it comes to the marine setting. They actually require more than the standard three surrogate species types, or extra safety factors if you don't have that data because often your marine environment, especially your coastal environment, actually has a lot more different types of critters. And so they are adding some cautions for us. We can't just think about a little bug, a single little bug, as representing that broader community.

So that's just another idea or another thing as folks are scanning the data, if there are other types of species, including marine species, it's great to be able to include that.

Okay, and then thinking more broadly about non-aquatic, this is a little bit veering into exposure. But I was thinking that building a more comprehensive, conceptual model, as we've heard Kelly sometimes mention in past meetings, could help us identify whether aquatic tox might be a pretty good -- the main priority to focus on when we think about our wildlife, our ecotoxicity, or whether there might be other types of organisms that we should think about.

And kind of contrasting examples would be

a product that's primarily down the drain disposal. It goes to your wastewater treatment plant. There you might be able to have a good justification that aquatic toxicity is your highest priority datapoint.

If you make a solid product and it goes into the waste stream, into a landfill, there I'm starting to think about our terrestrial feeding birds. Because there's a few different types of chemicals, we actually see a lot in birds feeding on the land in their eggs. And it's thought that the exposure there is partly from, you know, our urban environment, they're consuming garbage, essentially. They're maybe at landfills or waste transfer stations.

And so they're you're -- if you focus exclusively on an aquatic toxicity, you're missing this other type of organism. And in some cases, birds do have some behavioral effects from some of these chemicals, and I'm thinking of the flame retardants, for example, or real developmental-type effects.

So it's, again, a very different type of organism. Different modes of action might be active. And so if you have that data, even if

you just have the monitoring data, even if you're missing the toxicity data, that would be an important thing to include.

Now an even more pie in the sky, I suppose, thing to consider might be community effects. I was just reading an article about nano copper. And it's by Keho (phonetic), et al. And she's seeing some indications that perhaps, looking at the whole community of, you know, benthic organisms, the community might be more sensitive than an individual organism in a test setting. We don't typically have that kind of data. But if it were available, it would be great to include.

And then this is not toxicity but it's an impact, it's a water-relevant impact, which is thinking about wastewater treatment and clogging or fouling of filters. Those sorts of things can be an additional sensitivity of our water systems as we're thinking about protecting our aquatic communities and, you know, possibly reusing, recycling water that could potentially be relevant to some of these chemicals and alternatives.

So that's it.

CO-CHAIR FONG: Thank you very much, Becky.

I have Ken Geiser next.

MR. GEISER: Thank you, Kelly, as usual for reminding us the ECOTOX issues but, you know, I mean, it just raises a whole bunch of questions in my mind.

But probably the only relevant one or the only one that has some usefulness here is, as you said, you could look at test data on specific species, and then where you just don't know what you've got, you just take the lowest threshold as the indicator. But as you say, there are many species. And many species, we have very, very poor data on, in fact, so much so that you could kind of say that even a sentinel thing like something that's, quote, well-studied doesn't represent in any way all of freshwater fish or saltwater fish or any other thing like that.

How -- can you give us any recommendation on how you deal with uncertainty and vast data gaps in this area? Is there -- the only thing I was thinking about, is there -- I mean, there's concentration data on chemicals in various species. That is around, I know, because you can

you do just biopsies or whatever. Is there any way to use any of that as a surrogate for anything or -- you can hear what I'm wrestling with. Just it's one thing to raise the problem. It's another thing to figure out what a solution is.

CO-CHAIR MORAN: This is a really good question because I've actually been talking with the -- I'm a chemist and not an aquatic toxicologist, so I get dangerous when I get into aquatic toxicology. But I've been asking a lot of questions in this area.

In fact, I had some of the DTSC scientists, Dr. Doherty and I had some conversations with other aquatic toxicologists to try to ask this question, and they told me some really depressing things. That when you only have one species, one aquatic species test, it's as if you're in a room with your dart and you don't even know which wall to throw it on, you know so little. When you get up to three, you can at least tell what wall it's on. But you still don't really know whether you're representing anything, if you just happen to have gotten the top of the distribution or the bottom.

Having three aquatic toxicities species -- or aquatic -- three different species for -- with aquatic toxicity data for a lot of the chemicals that we're talking about here is still something we're hopeful for. So I understand, that's a long way.

Predictive methods are coming in to help us get some idea, what's the ballpark there? Some of them are better than others. So the EPA tools there I think are really growing rapidly within the domain that they're useful for, but that's still a problem. So that's an area that I think really needs investigation.

So I've been working on what can we do to try to give ourselves some confidence to support decision making and so far haven't figured anything out. And when we come back to research agenda tomorrow, that ought to be on the list.

CO-CHAIR FONG: Ann?

MS. BLAKE: This might -- you may just have given me an answer here. This might be a research agenda question, but I was wondering, to build on your -- the various comments about what do we do when we don't have data gaps. And, Kelly, you had something about DTSC signaling

that there were methodology gaps. I wonder if we can take a more directed approach and actually partner with the people that are coming up with methods as we speak. And the ones that are coming to mind are cytotoxicity assays for the perflourinated chemistries which is a very active area right now, and I know it's one that you're going to focus on. So maybe we could talk about this in more detail tomorrow.

But what's the capacity and interest on DTSC's front to actually, you know, work with the researchers that are trying to develop these methodologies now with the very active examples that we have products and chemical combinations that are coming up in our Work Plan.

So just that.

CO-CHAIR FONG: Thank you very much, Ann.

Are there any more comments or recommendations related to ECOTOX before we move on?

MS. COHEN HUBEL: You know, I guess the only thing I would say is on other ecological endpoints. And I'm going to think this area is one that we're working on in the context of pre-prioritization and prioritization under TSCA.

We're not doing it. We're doing the science side.

But -- so, you know, I mean, some of the areas that we're mining for different kinds of approaches and tools are, you know, out of pesticides' programs, because there's a lot of different tools and things there that are relevant. So it's -- you know, but -- and those are at a point where I think some of them can be implemented. Well, in this case you're not even looking at, you know, across thousands of chemicals, but for particular problems that people are looking at here, I think there's definitely some opportunities there.

CO-CHAIR FONG: Thank you, Elaine.

Dr. Williams?

DR. WILLIAMS: So I don't know if Ken can speak to this or not, but the issue of the pesticides puts me in mind of some work that was done to enhance GreenScreen for bee (phonetic) outcomes with regard to the neonicotinoids, GreenScreen for bee toxins.

UNIDENTIFIED MALE: (Off mike.) (Indiscernible.)

DR. WILLIAMS: Yeah. And so there was

some work done. I think NRDC led that effort. And I wondered about kind of the roadmap, and this is slightly off topic, but just the roadmap for expanding endpoints in GreenScreen, or if anybody's tracking that, or, you know, maybe incentivizing some of the development of some of these other endpoints in those tools.

MR. GEISER: To answer your question, I can't. I know from an administrative side, but I'm not sure what the latest plan is to do it from the technical side.

CO-CHAIR FONG: If there are no more comments related -- oh, sorry. If there are no more comments related to ECOTOX, let's move on to exposure assessment guidance.

And before we do, actually, I just want to make the comment that I'm just so glad to DTSC is able to hire an expert on exposure assessment, so, welcome.

So I think what we're looking for is specifically, you know, trying to understand what DTSC needs from the Panel in terms of guidance and exposure assessment, and then how -- specifically as related to the AA Guide.

So let's start hearing from the Panel.

MR. NICAS: So this is -- what I'm going to talk about is pretty specific and really narrow, because it has nothing to do with really fate and transport of chemicals that would then get into water systems, because that's really its own specialization. It's something I know, blessedly, little about.

But there are a number of products that I think are going to be used by consumers directly that are going to involve exposure to the person who's using it during the period that it's being used. And these would be, you know, you could think of aerosol products, and here were have methylene chloride paint strippers was the example I was keying on. And the exposure, I mean, there are well developed models for looking at the exposure to a person as they use a material. And, of course, a key element would be the rate of emission of the contaminant from that chemical as it gets into the air, which, of course, would depend on the volume of use of the contaminant and the way you use it and the temperature and, you know, other factors. But there's a certain -- a certain item of house fast it gets into the air, amassed period of time.

And in the methylene chloride exposure assessment that was in this document, there was an assumption of a constant rate of emission, you know, that it would be constant over time. But I think that the authors of the document themselves realized that it wouldn't be.

You know, when you apply a paint stripper, a semi-paste, which I think that they were talking about here, you slop it onto the surface that you're going to slop it onto, and then you wait for about 15 minutes for it to do its thing. And during that period, it has like a paraffin wax in it, and then so that paraffin wax presses the emission of the methylene chloride into air, which means it keeps it against the surface that it's meant to act on. So it's not there for the benefit of the consumer, it's put there for the action of the product on the surface. And then the consumer comes along and scrapes it off. And then, you know, that's sort of it.

So what happens is that you can think of that process, there's not this constant rate of emission. I have my wonderful diagram which I've drawn, if I can find. What you're going to find,

if this was time zero here, you get this sort of spike in emission during the time you apply it, and then there's this -- and it really goes down pretty quickly towards zero, not really zero, because that diffusion barrier sets up. So it goes down really low, and then you wait 15 minutes, and then you scrape it. And you get another spike in emission, which also fairly quickly starts decreasing, but never really gets to zero. It levels off for a long time.

So you can think of a -- what was used in the document was a three-hour period. What you have is this sudden spike in emission that goes down; 15 minutes later you get another spike that goes up and then comes down and trails off gradually. So that's clearly not a constant emission process.

And so what I find -- and what happens then is that the exposure early on, in that first 15 to 20 minutes, I mean, that's where you've got high exposure. And if you start to assume that the emission is constant and look at a three-hour window of exposure or an eight-hour window of exposure, what you get is an estimate of a much lower exposure level. Now I'm not saying if you

waited eight hours and got all of that mass, that you're cumulative intake would not be different, you know, it's not going to be so different, but the effects on your body will be.

So when you're thinking about the fatalities that are associated with methylene chloride paint strippers, that's because they use a lot of -- I mean, it's not -- the person didn't die after eight hours. You know, they died after an hour or two hours because they were in an environment where a lot of it evaporated quickly and they had very poor ventilation.

And, you know, I don't know about the gentleman who died, but I know that there are a lot of fatalities associated with stripping bathtubs. I don't really know what they're being stripped of, quite honestly, but it's not a wood surface.

So an alternative, really, of sanding, which really would make sense for wood, I don't think that alternative would apply for the bathtub's ceramic surface, which is a really -- it happens to be, unfortunately, in the real world a high-hazard kind of operation.

So what I didn't -- one thing I didn't like about that exposure assessment, it was ignoring, for simplicity, the actual fact that the -- that there's a variable emission rate that can lead to a higher exposure than would be accounted for by the way that they did it here.

The exposure assessment, also it just wasn't sufficiently explicit in what kind of scenario was being modeled. What they said, well, here's a mass and it's going to go onto one square meter of surface.

And then they did a computation of an eight-hour average, and they presented a couple of equations, and they didn't tell you what it really was that they were assuming. I couldn't tell if they were assuming that all the mass evaporated in three hours and then no further mass evaporated in the next five hours, and where this person was. You know, it's an eight-hour time average value; it's meant to be an exposure to someone. Well, was this person spending all their eight hours in the room, and why would they? I mean, why would you spend all your eight hours in a room with evaporating methylene chloride? So in a way, you can say that that was

kind of an overestimate over the long term because no one in their right mind is going to stay in a room for eight hours when they don't need to stay in the room for eight hours.

But I think really the major error was that they underestimated the short-term exposure, which could really have bad consequences.

There also was something about the -- there was the lack of explicitness in the algebra. Now, you know, they have equations there, so you think, well, that's pretty explicit; right? You know, it looks transparent, here are the equations. But what they didn't do was say, now here you multiple this by this and you divide it by that and you add this and you subtract that, and that's how you get the final number. I mean, that's what your seventh-grade teacher would want to see on your homework, right, carry out all the steps and show me what you did, and they didn't do that here.

And so because they didn't do it here, they have some internally inconsistent results. They went and they said, well, we're going to assume a gallon of this material was applied to a square meter of surface, and so the total

methylene chloride mass present in that gallon 435 grams. Okay. That's -- but in their example they said, well, we're going to use an emission rate that came from volcanic (phonetic) materials and we're going to assume that it was this certain value. And if you multiple that out by three hours, what you're evaporating is 612 grams.

So there's a blatant inconsistency in what the assumptions were of the scenario and what was being plugged into the model. And you don't -- you can't see that unless you follow through the algebra and say, well, here's how we got the final number and, oh, my gosh, it was not consistent with the beginning number. So I saw that and it bothers me that that could be there, okay? That should be there.

And the last thing I'll say about the exposure assessment, it's very traditional. They use a very traditional, what you call a well-mixed room model. I have a cup of solvent here and it evaporates, and that model says it instantaneously and uniformly spreads throughout the entire room so that my exposure level to it, when it's right under my nose, is the same as

yours, which is known to be nonsense. Of course it's higher near the point of emission.

So there are -- there are models that account for this spatial variation, and they've been around for a good number of years. And these people just used -- they ignored those models and said, we're going to use this well-mixed room model. So they used a model that's kind of guaranteed to underestimate the exposure of the person who's applying the material, because that's right under their nose, and who's scraping the material, because that's right under their nose too.

So that's why I think that guidance provided by DTSC is needed because when you have an application of a chemical that a person's using right near themselves, you can't allow this well-mixed room model to be used because it's mathematically simple to use, but it also underestimates exposure intensity.

So those, you know, without belaboring other things, those were the major things I saw in this assessment. And I was surprised that I saw it in the assessment. And I think it's because the people who did the assessment do not

have experience and a background in assessing exposures, okay, at least exposures in this kind of context.

I mean, there's this whole profession called industrial hygiene where that's what they've done for the last 100 years, assess exposures in these kinds of situations. And I think that, well, certainly these people should have had someone in their group team, you know, who was knowledgeable in that area.

But I think that if the DTSC were to in some shape, form or fashion rely on the exposure assessment that was done within an alternative assessments, for whatever reason you want to rely on it, I think it would be good to have it reviewed by someone whose expertise lies in that area, specific area. And I'm thinking, if it's not in-house, and I don't know if it is or not, then you could send it off to the Occupational Health Branch in the California Department of Health Services, because those people, you know, should be able to look at it and say, yes or -- yes or no. Don't send it to me.

But that's all I wanted to say.

CO-CHAIR FONG: I have Elaine, then

Kelly.

Elaine?

MS. COHEN HUBEL: So I think that Mark raises some really -- some really important points. And I think just to bring it up one level, what I see as really important in looking at the different alternatives assessments and why in general maybe on that survey, exposure was kind of ranked as one of the things people needed help with is that, so you're not necessarily doing just a traditional exposure assessment; right?

What you're really interested in is that relative exposure. And you can't do relatively exposure correctly if you don't define the scenario correctly, and then if you don't define what changes in the scenario if you're going to look at another, at an alternative; right? Is it -- did something change because just the properties of the compounds change, or did something change because the product itself, the, you know, properties and the longevity and the life cycle of the product itself changed?

So, you know, while I do think there are, at some point, are probably some -- you know,

when you look at the hazard approach, that people tend to look for, you know, what is this most sensitive hazard endpoint? And I do think there's probably things which might be indicative or metrics that can be used as indicators of potential exposure, you know, that maybe you don't need a full-blown exposure assessment. If you don't -- if you don't really clearly say what it is you're comparing and why those are -- why those things are changing, then you just kind of sort of miss the value of even considering exposure.

And that really -- you know, I think part of why alternatives -- well, part of what's so -- what this -- what this DTSC -- what this legislation, the Safer Products legislation brings that hasn't really been a focus before is, again, this focus on the product; right? And so exposure is all about not necessarily, you know, chemicals. I mean, we've had these examples where the product is the chemical. But for most of the -- many of the things that you're bringing to the table, these are the products. And when you change the formulation, you change the function, you change the performance -- not the

function, but you've changed the formulation, trying to convey a similar function, you change the performance, and you potentially change not just the exposure to a chemical because the properties of the compound are different, but literally because the product behaves -- you know, is used or functions differently.

And so there was, you know, an example, I can't remember which one, where, you know, they had the two different paints and noted that one paint, you would use less but you'd use it more often. And, you know, then on and on about data gaps.

But where I think Mark's point is particularly salient is that one of the biggest data gaps is going to be emissions from products; right? Because it's one thing when you're just, again, you're just spraying it. I mean, there's -- it's so -- this is going to get harder and harder with articles, right, and things that we just don't, you know, do well and, in fact, it just may require that somebody measure something.

So I think that was one. I just want to check my notes here, which disappeared yet again. I got to print stuff out.

So -- and then I think the other thing, too, going back to this issue of product and what we mean, what we even mean by exposure assessment, because I heard Kelly note that, you know, persistence, bioaccumulation, that's not hazard. And, you know, depending on sort of historically what kind of assessments people are doing, it often gets lumped one way or another way.

But, in fact, you can't really say much about exposure and about exposure at sort of key places in the life cycle of the product if you're not saying something about what the -- you know, what's happening with that chemical? How is it transforming? How's the product transforming? Which are the places in the life cycle that are most of concern, or the things that you're trying to -- what -- you know, which problems at what point in the life cycle are you trying to solve, and which other ones are you just trying to, you know, sort of check and make sure there's nothing crazy going on. So that's just a little bit different than, you know, than having to do risk-assessment kinds of exposure assessments.

So I guess those might be sort of the key

points for now.

CO-CHAIR FONG: Elaine, thank you very much.

Actually, if I may just add a comment to what you and Mark were saying in terms of, Mark, you were talking about emissions from product over time and that it decreases. One of the things that I noticed in some of the papers that I've read is that through the use, in fact, you can increase emissions at certain times because -- by wearing down the product itself. Is that also a possibility?

MR. NICAS: (Off mike.) (Indiscernible.)

CO-CHAIR FONG: I'm talking specifically about articles, not --

MR. NICAS: Right. I suppose anything's possible. I mean, the only product I can think of where you could actually have an increase in emission would be something that was a urea formaldehyde, something that basically could form formaldehyde. And through the hydrolysis of the product, not only -- you can get ongoing emission, that never goes away at a low level, but maybe you could spike emission.

It's just that if you have things that

have solvents in them, I mean, that's your typical substance that will keep off-gassing over time at a decreasing rate, you know, you have less and less of it there as time goes by. You're not replenishing the source. And so, yeah, maybe if it got heated for some reason you could increase the emission rate, up it. But when that goes down again there will be even less there.

So I don't see -- I don't know. I mean, I'd really have to see a specific article.

MS. COHEN HUBEL: So can I just follow up on that? Because that's true, of course, for when you're talking about volatilization. But if you're, you know, if you're actually talking about the product itself breaking down and now you have particles, you know, that are now accessible that weren't, then, you know, then it's just like a whole different ball game; right? I mean, you're talking about actual volatilization or -- yeah.

CO-CHAIR FONG: Great point, Elaine.

Kelly?

CO-CHAIR MORAN: Thank you, Chair.

I wanted to second that, because I've

seem that, the decomposition of the substrate being really important in outdoor building materials, as an example, so you can release the chemical contents in something as it basically goes through wear. There's a bunch of examples of that, environmentally.

I do want to clarify that persistence in bioaccumulation are important hazard indicators. I just don't put them in the eco bin. So just -- I think they're actually broader than eco. Bioaccumulation is -- it gets into fish that gets into people, so it's not about eco. And, in fact, what I'm seeing in my profession, anyway, is that things -- there aren't many things that are bioaccumulative. And there are quite a few things that aren't even persistent but they're virtually persistent because the discharge is continuous. So that's -- but that's, yet, another ball game.

And I second what Mark said about modeling. That's an area for each specific product. I think it's going to be -- it's -- this is a challenge. But there's certain things in each AA that comes up that people are likely to model. And I think DTSC may need to signal

some things to folks about modeling. I see a lot of examples of modeling in my work that are just the aquatic analog of what Mark's saying, that the averaging time is wrong, the emissions pattern is wrong, and so they'll model for 30 or 60 days and the organism is dead at day 4, and when the concentration was high, but they averaged that concentration over 30 or 60 days so it didn't look so high. Well, you know, the organisms are all gone in real life, but the modeling didn't represent it properly.

And that's going to be an ongoing issue. And I think DTSC is going to want to focus people. I know the acute hazard is the problem, this or that or the things for the starting one, and then for the alternatives, there may be different exposure scenarios, so that's going to be harder to provide guidance on. But I do think DTSC is going to have say something in this area because it's so new and we're trying to figure out how to do it.

So to my specific stuff, I'm coming at this from a little different angle than Mark. I'm thinking a lot about aquatic exposures in particular, because I've reviewed a lot of risk

assessments. And I work mostly in the pesticide world, so there's a tremendous amount to be learned from methodologies being worked on there as EPA has particularly been investing in improving its eco-risk assessments around the last couple of cycles and trying to better integrate with the Endangered Species Act.

The biggest mistake, number one mistake that I see people make is they don't identify the exposure pathway for aquatic organisms. That is number one. And it's because people assume that most of it doesn't get into water; it gets into a sewage treatment plant, it stays in the product, it stays in whatever environment it was in, yada, yada, yada. Most water pollution doesn't come from most of the chemical.

So I can say that again because it seems odd, but most of the chemical might stay where it was placed, but most water pollution is coming from the little bit that doesn't stay there. This is -- I can name you example after example for pesticides of this. Good examples are diazinon and bifenthrin, two common pesticides used outdoors; 98 to 99 percent of it stays where it was applied or degrades there, so it's either

sequestered or it degrades there. In most cases -- both cases of those, less than a percent, maybe a tenth of a percent of what was applied actually gets washed into surface water, and that has caused widespread toxicity in aquatic environments in aquatic environments in urban areas throughout California.

So that pathway exists. It's really small. And if you ignore it, then you're ignoring potentially huge amounts of water pollution. And that's the importance of conceptual models, including all pathways that are feasible, but that pathway only matters if that chemical is really toxic to aquatic organisms or has some environmental fate that makes it really stable in that environment.

So I mentioned bifenthrin. So bifenthrin is very unusually stable in anarobic environments, so it lands in aquatic sediments and it just stays there. So it's half-life is immeasurable, as far as I can tell, from all the studies that are done there. So this tenth of a percent that runs off and gets into the aquatic environment and sits in the sediment is -- and its toxic at a nanogram-per-liter concentrations,

is causing all of this problem.

So that means if your conceptual model says, oh, not much goes there, well, then you're blowing it, but you're not blowing it if the stuff isn't very toxic to aquatic organisms, so that's the nuance of that.

So big story, the main point is that it's really important to have very clear conceptual models that consider all of the feasible pathways, even those indirect exposure pathways, to the indoor and outdoor environments. And the most important is where your chemical is very toxic to something, particularly an outdoor environment. So if it's especially toxic to some organism or something else so that down there in that microgram per liter and lower you've really got to pull that thread all the way through, whereas if it's not at all toxic, so it's going to take a gram to kill something, well, then you don't really need to worry about it so much.

Let's see. So often the exposures -- so we're going to try to prioritize in the identification of relevant factor, so we have to figure out which exposures are the most potentially important. And I've often seen

people using a ratio method, so some sort of here's an amount here, here's the toxicity, just do some ratio'ing. There are simplified techniques like that and I think that's something that needs exploring as a way to help screen which pathways matter.

A strength I saw in a few of these AAs, particular the Safer Choice ones, were the use of monitoring data to identify the existence of that pathway that may or may not -- you can't quantify all the way through but you see if exists. And that's, again, something we can't do every time. But actually getting out there and taking a look for monitoring data for a chemical can help us identify a pathway that exists for that chemical and that kind of product, and therefore would exist potentially for other chemicals in the same kind of product. So just because you didn't find that specific chemical's monitoring data, if you see that monitoring data from that product or that chemical being used in other ways, you can draw that linkage.

So Becky was the lead author or one of the lead authors on a study that made the connection between pet flea control chemicals and

aquatic environments through sewage treatment plants. And people thought that was a broken pathway because you put the stuff on the back of your dog or your cat and then it would stay there. Well, it turns out a lot of animals gets washed, but there's also a lot of steps in the middle that transfer from the back of the dog or the cat into the aquatic environment. So this pathway is the -- and some of this is actually probably proven for fipronil. It's pretty well understand for imidacloprid. But there's another eight or ten different chemicals that are used the same way. But one can understand if that pathway exists for fipronil, and probably for imidaclorprid. It probably exists for the other eight or ten. So just, you know, saying, let's do that extrapolation.

All right, so I belabored that a bit.

And just going quickly through, I think that there's a lot of mistakes that people are making in making assumptions based on fate data. The biggest one is ignoring continuous exposures from ongoing emissions, so air emissions, sewage treatment plants, that's just a huge one. People do a (indiscernible) model or something and say,

well, here's the compartment it winds up in and that's that, and they're missing those discharges.

The other one that just is my pet peeve is people do a ready biodegradation test and they say, oh, it degrades in eight or ten days, therefore it will be destroyed in a sewage treatment plant. And there's a lot of environments, like aquatic sediments, where there's no biological activity. Another key environment without a lot of biological activity is outdoors in pervious surfaces, so roadways and building surfaces and things like that, so there's actually not a lot of degradation. And that's not a good indicator test, and so that's going to be important for some but not all, but it's a common deficiency in the methods.

So -- and I have probably said enough, so thank you.

Thank you, Chair.

CO-CHAIR FONG: Kelly, thank you very much for your excellent comments.

I have Becky, and then Jack and Helen.

MS. SUTTON: Just a couple comments about exposure during product use, and then just a few

on the aquatic or ECOTOX area.

So one comment I have is about exposure to chemicals produced while the product is being used, so this might get to what you were asking about, Art, earlier. But here I'm thinking of the example of powder cleansers with chlorinated antibacterials in there where when you're using them in your bathroom, you're getting them wet and they end up volatilizing or off-gassing a number of different chlorinated byproducts, including things like chloroform. So this is not necessarily present in the product, but it is an exposure that the user would encounter, and so something to keep in mind.

Another thing, when I was reading the methylene chloride example was I was a little surprised initially when I saw the frequency of use data. It seemed liked -- I don't remember the number, but it seemed a little low. And then I looked at the citation and the most recent survey data they used was from 1992, so that seemed a little old to me.

And I think maybe one of the advantages of having manufacturers and other folks making these AAs is hopefully they'd have more up-to-

date or real-world use data, and even sort of product disposal data that could inform these kind of experience exposure assessments.

Another thing I'd like to see more carefully considered is typical versus worst-case exposures, and that's true for the worker, as well for the -- say the aquatic environment or the wildlife that are being exposed. You know, folks may have different ideas about what constitutes worst case, but they ought to be spelling out why they made the selections, why this is their worst-case exposure scenario.

And then finally, multiple routes of exposure, sometimes your critter out in the environment is getting it through the water and through the food. And so I'm thinking of a pesticide study I just read where it's aquatic invertebrate and they're getting exposure through the water, as well as through leaf fall into the water. And luckily, in this case the additive effect was predicted -- you know, it was very consistent with prediction. There wasn't any different mode of action of metabolism based on these independent exposures, but it should be considered for the wildlife if they're getting

exposed through different pathways.

CO-CHAIR FONG: Thank you. Thank you very much.

Jack?

MR. LINARD: Unfortunately, I'm not an ECOTOX expert. But in talking to our experts, the one thing we -- I just wanted to make sure we bring in is the amount of a product, how much is getting into the environment. Because you say a certain percent goes through, well, if there isn't very much of it in the beginning, then there isn't much in the end. But if you're using a lot of a product, then you have to consider the total amount that gets into the system, as well.

So I think that -- they pointed out to me that that's one big difference between ECOTOX and human health toxicology is you have to know how much is the environment, how much enters the environment. That's not always easy to get to because you have different companies, you know, different levels of different ingredients that companies market. But you -- to get an accurate picture, you really need to find a way to get to the amount of that chemical, amount of that product entering into the environment in the

first place so you can see if the environment -- does it overwhelm the environment, the environment's ability to even handle it? So I think, you know, when DTSC actually begins to assess, they need to have some way of determining roughly how much of that chemical is out there.

CO-CHAIR FONG: So, Jack, do your colleagues have any suggestions on where they may be able to find that kind of information? So you wouldn't have company-specific data; right? But how would you get information about how much other companies might be releasing?

MR. LINARD: It is really tough to find. I know when there's an issue that pops up, and I can point to examples 20 years ago, trade associations will get together and try to resolve it as an industry. But it's really tough to get all industries, especially if it's used by a number of different types of -- if it's used in a number of different types of products, you've got to go to the chemical manufacturer. A lot of times, it's the chemical manufacturer that will know where it's being used. Sometimes they don't know because distributors handle it on their behalf.

So then you're just going to end up with models trying to figure out where it is, look at any public information available, go to the suppliers, but it's not easy. So that's why I'm saying, if you can just get a rough handle on approximately how much and then let people refute it and say that's way too much or not enough. I mean, you can sometimes sort of prompt people to give you the data, but it's not an easy thing because companies don't want to give up numbers like that.

But I think as part of a modeling program, determining the actually exposure, it's something -- that's part of the assessment for ECOTOX is you've got to have an idea of how much is out there.

CO-CHAIR FONG: Dr. Williams, do you have a follow-up comment to Jack's comment? I noticed you were --

CO-CHAIR MORAN: I was just thinking about that particular struggle that they've had in the European Union under REACH and just how much they've realized that data don't necessarily get reported accurately in terms of the use. Chemical companies are being overly cautious in

terms of reporting the use, because they're required to report the uses of their chemicals; they would rather make sure they don't use any uses out. And what ends up happening is they're reporting uses that actually aren't -- where they're not -- the chemicals aren't used in those contexts.

And so ECHA is doing some work to try to validate some of the use information, but it's a real challenge.

CO-CHAIR FONG: Absolutely.

I have Helen.

MS. COHEN HUBEL: Just to follow up really quickly on this.

CO-CHAIR FONG: Oh.

MS. COHEN HUBEL: So, you know, I mean, that's a huge -- it seems like more of an issue in terms of prioritizing and selecting your product chemical combinations. But again, on the alternatives assessment you're looking for relative exposure; right? So you ought to be able to build some kind of case about how the alternatives would change what's out there.

CO-CHAIR MORAN: I'm just going to briefly leap in.

That's actually why I do the quantity toxicity ratio a lot, although you can do it for all of a chemical. Often a replacement has a different quantity associated with it, and so that quantity toxicity ratio would at least give you some feel for your particularly situation.

CO-CHAIR FONG: Great. Excellent. Thank you very much.

I have Helen.

MS. HOLDER: I kind want to go back to the indirect pathways point that you had made, and also tie it back to the ECOTOX data gaps and the worst-case scenario.

So when I kind of take all that together, that, to me, says that maybe we should always assume and aquatic pathway until the entity argues that there isn't one or make the case that there isn't one as a guidance into the guide. Because -- and that's a best practice that many of us use. So that might just be something to put in there, to say that we start with an assumption that there's a pathway until you can give us a good indication there's not. Because especially if we know that there are huge data gaps in that space, it's probably a safer

solution.

CO-CHAIR FONG: Ann?

MS. BLAKE: I was expecting more there, Helen.

So I wanted to highlight and go back to our question about increased emissions during use phase and some data gaps. I'd like to take us to the worker exposure side.

So we often think about worker exposure during manufacturing and disposal. But in use phase, one situation that's come up where we have a huge exposure data gap has been in the nail salon world where we're not even sure what the exposure is. There's an increased use now of metallic nail polishes, very glittery ones, and we're not sure what happens in buffing in polishing. So there's an in-use phase that you hadn't -- we hadn't necessarily thought about. So when we're doing conceptual models for service industries, that's another piece that we probably need to highlight.

CO-CHAIR FONG: Mark has a follow-up.

Mark?

MR. NICAS: (Off mike.) (Indiscernible) comment minutes and minutes ago. It was that

really there are situations where there is -- there really isn't any reliable emissions data. And it's not infeasible to actually go collect it via measurement. So I'm thinking the nail salon thing in terms of buffing and processing nails would probably not be an elaborate laboratory study. It would probably be pretty straight forward. Well, who's going to fund it? Well, that's a good question. The manufacturers of the products, I suppose, but you know, it's not that big an economic burden. And it's really the most reliable way of doing it.

MS. COHEN HUBEL: Way less expensive than tox testing.

CO-CHAIR FONG: But I would think that it would be relatively inexpensive if you were to measure it at one nail salon, but is that representative of the entire population? I'm sorry. How representative is that of the entire population?

MR. NICAS: What you could do is measure an emission rate. In other words, you know, if you went -- it's just like the methylene chloride.

If I went into a stripper place that

finishing furniture and they were still using methylene chloride and I measured the methylene chloride exposure level of the person there, well, I would be taking into account, inherently, how much they used, over what time period, what the ventilation characteristics were, and also the work practices of the individual. And all those things could vary from workplace to workplace where you've got tremendous variability and exposure level.

But what might not be so variable is if I would take a product or several products and in a controlled laboratory setting under confined conditions, you know, I don't know anything about nails, okay, buff them, I mean, whatever that consists of, and measure -- and so you're measuring the emissions that -- you measure the emission rate or the emissions that come off a set action. Now how variable the action is between nail salons and people, I don't know. I don't imagine it varies that much, but you could measure the extremes. And you could say, well, here's the kind of range of emission rates that we get when we buff nails, things of known composition under, you know, these conditions.

And then, of course, if you wanted to model, you could say, well, if you're in this nail salon and you're at this distance from the buffing thing and you have this kind of ventilation, or if you had a local exhaust ventilation pulling it off, here's our estimate of what your exposure level would be, but the actual emission rate would be then not so uncertain; what's happening in the salon might be uncertain.

CO-CHAIR FONG: Thank you.

Elaine?

MS. COHEN HUBEL: I mean, just to follow on, so you know, one of the things that we're doing in ORD is even just going for -- (cell phone rings). I thought I had it off.

(Colloquy)

MS. COHEN HUBEL: Nobody calls me -- is implementing these kind of higher throughput just approaches to get some kind of emission, like standardized emission values from products.

And you know, so it's not going to be something -- you know, there's going to be a potential debate about whether those -- how -- what that assay looks like. Is it -- you know, how meaningful is it? But it's standardized,

right, and then somebody can use it or they can decide to do a chamber study; right? And I think what you're describing is more along the lines of the chamber studies.

But the point is, is that there are -- it's -- these things are measureable, it's just that we have so many products and so many chemicals. And I think some of what we've done, too, is, you know, you grind up the product and you do non-targeted and you get thousands of stuff.

But anyway, I do think that's probably the direction that we're going to -- you know, people are going to want to go in anyway, whether it be the regulated or -- regulatory or regulated communities, because this is a massive data gap.

CO-CHAIR FONG: Thank you.

Ann, any comments? All right.

Are there any comments related to exposure assessment? If not, I'm going to turn the mike over to Kelly and --

CO-CHAIR MORAN: Thank you. I appreciate you chairing that section so that I can weigh in as a commenter.

And we're going to move on to

strengthening problem formulation.

One thing I'm hearing in this discussion, before we move on, is a lot of things that we need to remember to bring up tomorrow for the research agenda. And one thing that staff are likely to ask us to do is to try to give them some recommendations in terms of priorities. So that's -- right now that's a parking lot item, but we're going to un-park that car tomorrow afternoon, or maybe tomorrow morning, tomorrow morning. And I want to suggest that everyone think about those things a little bit and how that fits in with other priorities that you might suggest that the Department lay out.

So with that, I'd like to move on to strengthening the problem formulation. And this is something Elaine raised, and I think that others may also have comments on this, I'm guessing, from the nods around the room when Elaine raised it.

And, Elaine, I was kind of hoping that you might be able to talk a little bit about that, so not only what you meant, I think you started talking about that a bit when you gave your comments earlier, but also what you know

about best practices in that area, so what kinds of things might be helpful to AA preparers or what kinds of things DTSC might be able to share.

MS. COHEN HUBEL: Okay. So not being a risk assessor or an alternatives assessor, so what I was thinking, and I think it's a matter of really just restating the problem, you know, sort of all along the way; right? So if DTSC is putting out the documents that are justifying why they've selected a particular chemical product combination, they've stated there's a problem; right? And in their work plans, they prioritize things that are important and criteria they're using to decide what's a problem.

So in the alternatives assessment, I mean, I think, you know, when you start going down this pathway of alternatives, it gets really hard to focus the problem and figure out where to really put your energy in terms of the assessment. And so it's -- so, you know, I mean, there's all these NAS documents with problem -- it comes up every ten minutes, every conversation, every panel I've ever been in, it all goes back to problem formulation, but at the end of the day, evaluating, you know, so on the

one hand, conducting the assessment and identifying the factors that you're going to focus on.

So there's the problem that DTSC identifies. Then there's the problems that the people --

UNIDENTIFIED FEMALE: (Off mike.) (Indiscernible.)

MS. COHEN HUBEL: -- your responsible parties have. Because on top of the fact that DTSC has identified an problem from their perspective, there's a problem from the perspective of the -- of what they need in performance, why they're using the material. And I think this came out. Jack was very specific about this.

So what is it -- what is that -- what does that chemical or what does that alternative do that you need it to do? So then it's easier to pick your factors and it's easier to map out what the assessment needs to look like. And then when you circle back and you're making the decision, you're basing it on the criteria you set out at the beginning for what it is that's most important that you need to achieve. And

then when DTSC does their evaluation, they're going back and their criteria are ones that they've already stated and are laid out there.

So it's just -- I think it's just a matter of everybody really articulating real clearly so that you don't end up with these -- I mean, for me, when I read a lot of these assessments, some of the things are laid out. And even where they're laid out they just are -- to me, it kind of -- things wander, you know? So in terms of story, I mean, you know, I'm like one of these people, when I was a teaching assistant, they brought me, you know, three pages, when all I needed to do it was three sentences, and I never read it. I actually -- well, I just did that this week with somebody. I'm like, you cut it in half and I'll read it. You don't, I'm not reading it.

So I feel like that's like just getting people to sort of hone in on this is the problem, this is what I'm going to do. And now, when I go -- when I go back to evaluate it, like I have a clue of where to start.

CO-CHAIR MORAN: So do you know any good examples of this or guidances that are good for

this stuff?

MS. COHEN HUBEL: There are definitely guidances in the risk assessment context that, you know, could be mined. And I think, well, I think EPA has specific -- you know, they have these -- I could go find them for you. But I think it's -- you know, and I'll just say, Joel Tickner, you know, I think he has examples. And I think potentially that NASs framework document, I could go back and look, I'm not sure if they -- but I think that over and over this topic has come up and it's come up in informed substitution, and it's come up in alternatives assessments. So I can go do a little digging.

CO-CHAIR MORAN: I've seen EPA Office of Pesticides working on that. And the problem with using those examples is that they break them up into lots of little different documents, and so you've got to look at six documents to figure out what the problem formulation is for any particular chemical, so they're not very good examples that way.

But they have standardized, like in the eco problem formulation areas, their problem formulation explicitly include a conceptual model

for the transport and consider the fate data and identify the most important factors because, in fact, they're issuing data requirements to fill data gaps based on what they think is important, based on that preliminary analysis. And in many ways, that does seem to me like an analogue to what we're going to be requiring in terms of relevant factor identification.

So this conversation, to me anyway, directly relates to how people are heading down the path to relevant factors where we don't have good examples.

So I've got Ann, and then Jack.

MS. BLAKE: I'm hoping this is going to get your relevant factors.

So I'm playing out an example that we've got here in terms of problem formulation. So the one -- one of the examples that you chose for the 13, thanks again for whittling it down, was the anti-fouling boat paint. So just think about how that problem was shaped. I mean, we're looking for alternatives to boat paint. That, in its own definitely, has just narrowed, you know, what we're looking for.

So it's really how do you define the

functional -- the functional performance you're after? It may be a little easier when you're talking about a surfactant. But if you're trying -- what is it you're trying to do this boat? You're trying to not have aquatic things stick to it. You're trying not to have a biofilm. I'm actually making this up because I don't really know.

But, you know, if we're clear on that aspect, now when you -- when you broaden the likely alternatives, now you may have an issue with you have different sets of criteria that you're evolving -- that you're evaluating these alternatives against. You may have very clear alternatives -- excuse me -- criteria for assessing paints; right? But you may or may not be able to use those same criteria to evaluate something, for example, that is a micro-surface thing that allows -- you know, adaptation that allows things to not stick, bacteria to not stick, microbes to not stick to a boat. So that's something we'd have to factor in.

So that then takes us back to the relevant factor piece. So I'm posing -- I'm adding more complexity here that I don't really

have a good solution for, but perhaps one of the ways we might be able to do this is to play out an example and say, how would this work?

CO-CHAIR MORAN: So I think what I'm hearing you saying is that the problem formulation challenge here is making sure that the problem is defined in a way that's consistent with the regs, which are broader. Son in the marine -- in the fouling paint example, it's not the alternatives analysis that would be appropriate in California, it wouldn't just cover replacing an ingredient in paint, or even necessarily a coating as a function, because the actually purpose here is to prevent fouling. So that fouling could be presented through another means, such as some sort of containment system for the hull, or there's other technologies that are actually out there that don't involve the coating of the hull itself. Yeah.

Have I got that?

MS. BLAKE: I think so.

CO-CHAIR MORAN: Okay.

MS. BLAKE: I'm not sure how to tie that to the relevant factors, but --

CO-CHAIR MORAN: But that's -- but we're

talking about problem formulation in a lot of different ways.

MR. LINARD: And I was just --

CO-CHAIR MORAN: Jack?

MR. LINARD: -- basically going to say the same thing, but to me, that is the one huge benefit of the Safer Consumer Products regulation over other typical regulations in that it is a chemical and product regulation. So while I've said, yeah, you have to know what that chemical is used for, why is there in the first place, to your point, Ann, you have to know, why is this product there in the first place? So that -- if -- sometimes it's going to be that big, where you actually question the need for the product in the first place.

And that's why I said, on the methylene chloride, I was glad they put sanding as part of their evaluation because, you know, that may have its own issues, but at least it's an alternative to element methylene chloride, just by doing a different technique. So I think, depending on the scope, you've got to look at whether the product is even needed.

And that, I think, gets to your point,

Ann, that all of these have to be considered, but that's where the regulation itself is -- has a very -- it's a big plus to be able to look at both chemical and product.

CO-CHAIR MORAN: Go ahead. You don't have to stand up. You can just talk.

MS. COHEN HUBEL: I think I'm getting a little tired.

So just having like glanced really quickly at the NAS framework document, which I'm sure the DTSC folks are very familiar with, but anyway, you know, they have their little discussion of problem formulation. And I think to Jack's point, you know, if you -- the regulation is much more useful in and of itself in formulating the problem than the -- than any of these high-level guidance, which I think are just very -- you know, it's like listing common sense out; right?

But if that were the, you know, if that were the principle that was kind of communicated is that, you know, here's the regs, here's our concerns, what are your concerns or things that matter, and just having it articulated and having the, you know, the conceptual path laid out for

how you're going to get from here to there, I just think it's going to make it easier for it to be conducted and evaluated. But I don't think there's good guidance.

MS. BLAKE: I was wondering if we could -- I know ECHA has been struggling with this because they haven't defined this very well, and the alternatives assessments they're getting back are sometimes so narrow that there is no good substitute; right? So maybe that's a place we can go, not for guidance, per se, but guidance of what not to do, and go from there.

That's about all I know about it, so --

CO-CHAIR MORAN: That leads to a side question that I just want to ask people.

DTSC has taken a very positive approach here to avoid criticizing folks, who in good faith, are doing things with very different scopes. But I'm wondering if panelists see a value in pointing at specific deficiencies or just continuing with the positive approach? So it may be that a better thing is lessons learned or something like that.

(Colloquy)

CO-CHAIR MORAN: Okay. Ken. Helen.

MR. GEISER: These are kind of random thoughts.

I mean, first of all, I said this earlier, I think the value of the exercise -- well, there's several values to the exercise, assessing all these alternative assessments, but one of them was what does DTSC learn from looking at all of these? And it seems to me, I don't know whether you've made that effort at this point to list the lessons that you've seen, or in many ways, I guess part of this discussion feeds into that, or maybe should be directed at that. What do you -- what do we find, the lessons from these? It should be there.

As far as problem formulation, I mean, I think back to some of the work where we originally did training over toxic use reduction and all. And I know we, at one point, we had a hierarchy when there was a sort of principle, that if you couldn't solve the problem at one level, you moved to another level. And then there were sort of criteria on how you thought about a hierarchy of levels of the problem, and it did go from things like simple chemical-for-chemical substitutions, or maybe at another level

it was product-for-product substitution, and at another level it was function-to-function substitution, at another level it was system-to-system substitution, and you just -- you continued up.

Now what's interesting here, and it takes off of what Ann said, and that is, you know, without raising the question of gaming, but if you're designing an alternatives assessment for -- or let me say it the way I'm saying, rather than the way you would. If you're designing an alternative assessment and you really don't want to change your chemical, you might keep -- you might keep it very narrow so that the alternatives are very, very small. And so what does DTSC say about that in order to not allow that to happen?

So, you know, it might be that what one needs to say, you need to consider a range of levels of the problem and state the -- obviously, state the problem, because that does indicate a lot of other things about how you would design the alternatives assessment, but particularly what alternatives you would look at, but also that DTSC will be looking to see whether you have

an appropriate level for that, for solving the alternatives assessment question.

A little mixed, but those are some thoughts I had.

CO-CHAIR MORAN: Yeah. Helen. And then Jack's wavering. Okay.

MS. HOLDER: Yeah. So there's -- so I do think that using positive examples is what should be most of what you do.

That being said, there is a notorious alternatives assessment that I'm sure many of us are familiar with that was this company that manufacturers a nasty chemical did an assessment to find out that there was no alternative to manufacturing the chemical that they manufacturer because they manufacturer it. And that might be one, actually, to have a this-is-not-okay version of it. If you wanted to sanitize it or redact it or something to protect the guilty, maybe you could do that. And we can provide that offline.

So that I -- but there is one that's -- it's actually quite, quite funny. It's a very -- even though we don't want to talk about it, it's very funny, so that would be something to do.

MR. LINARD: Now I gotta figure out what

that one is.

But you were asking a question about DTSC and how they -- I think what I said earlier is DTSC has been very good at asking questions, sometimes rather pointed, I think. But as you gain experience with the AAs that are going to come in and the ones you review, you're going to get a lot better at going and asking much more pointed questions at people that give you that, did you consider this? And, you know, put the onus on them to actually come back and say, yes, we did consider it, or oops. So I think that's going to be a role.

Right now you're just gaining a lot of experience and I think it's very positive, but in the end you're going to be sort of an arbiter and you're going to have to know a little bit more about the field. And you can gain that knowledge fairly easily just by -- well, that's why we're here, to a great extent, is to help you gain the breadth of knowledge that you're going to need to adequately review these.

But as I said, even -- you probably won't know all the answers, but you'll learn to know which questions to ask and how to ask them.

CO-CHAIR MORAN: So lessons learned, asking pointed questions maybe a bad example, some critiques in gaps and methodologies that are pretty standard.

And Elaine is talking next.

MS. COHEN HUBEL: Yeah. So this is really just a question for DTSC again in my ignorance.

So in the context of learning and the early examples being ones that you get to use to learn, so is there any issue with whatever precedent gets set in the kinds of the ways that you evaluate things, or there's enough fluidity in terms of the process, that you really do have the opportunity to --

MR. PALMER: Well, certainly the criteria we used are the ones in the regulations, and that's good and bad. It's good because there's a lot of flexibility and a huge amount of discretion. It's challenging because there's a lot of flexibility and a lot of opportunities for discretion.

So each one will have its own unique aspects, and I think we'll learn from each one of those. And we certainly have learned a lot, I

think, in going through the process we've gone through to date working with the spray foam folks for over three years now and having a lot of technical discussion. There's a lot of knowledge that we have now that we didn't have then, and vice versa.

And so we are going to have the flexibility to address the specific needs of each priority product. And then there may be different ones within that sector because different companies are going to have different, perhaps, capabilities and needs.

But one other thing that strikes me is that we will have the opportunity that we always do, is this up-front dialogue before we get to just this academic exercise of doing the AA. So by the time we go all the way through identifying, having the dialogue, adopting the regulation and starting, we have a fairly good idea of what some of the key data gaps and challenges are.

So one of the things that -- I think where we might be challenged, and maybe the sector we're even regulating, is that where are there other examples in other sectors and other

methodologies that they could apply in their sector? So whether it's pesticides, you know, that translates for looking at eco or aquatic, or if it's on the manufacturing side, looking at worker safety, all of those things that I think would be helpful is if we had the menu of models and how they're applied and what specific question they're answering.

So, yeah, so -- but we will learn in each one. And we aren't -- we won't be -- we potentially could go back and change regulations to look at the criteria and the process, but it's also a very transparent process. And so when we get into the process, those first -- it will be a very public process, with the exception of legitimate trade secrets. And that's going to be put out for everyone to see, both competitors in that industry, as well as advocacy groups, government, academic, et cetera, so that will be helpful, hopefully. But it's going to be an iterative process.

I'm not sure if that answers your --

DR. WILLIAMS: And in terms of precedent itself, I think for -- when -- if you look at any environmental protection regulations, it takes

time; right? And so cleanup standards 20 years ago were not as codified, how you get to those standards, what methods you use. They weren't as codified 20 years ago as they are now. And I do -- and risk assessment the same way; right? It took a long time to get to risk assessment, the state of the art of risk assessment.

And so I do anticipate that -- I wouldn't say that we're going to be setting precedent. I'm just going to -- I'm just saying we would continue to learn. And I don't worry too much about establishing a precedent that then we have to go back and say we've learned more and there's more we need to consider. And maybe I should worry about that more, and maybe my attorney, if they were here, would tell me I need to worry more about it, but I do think that everybody recognizes the novelty of these regulations and expects us to evolve.

CO-CHAIR MORAN: Great. Onto Mike.

MR. CARINGELLO: Yeah. On the topic of bad examples, I guess I just look at that and I say, if I look at the job that you've done so far with this regulation, it has to be an example of an agency implementing a regulation, creating and

implementing a regulation that has been the most collaborative that I've ever seen globally. I mean, you have not just said, oh, here's a regulation, follow it and we'll talk to you later. You have had meetings. You continue to have stakeholder meetings. You have workshops. You gather information. And you have always interpreted that. You've brought that in, understood it, and then come back with information back. And it's not always that you've agreed with what the stakeholders have said, you've always had a discussion.

And to me, when we talked earlier about some of the examples and we said, okay, if you took this and were giving it just one plus mark instead of three, can you expand that? Why would you? What would make this a three? What would make this more useful, so it meets the regulation? I think that's a very good exercise.

But the exercise of going out and finding a bad example, it just kind of -- it takes you back from that step of, okay, we're spent the time up front with industry to say, okay, here's the children's mattresses, and we've talked about this for long enough and gathered the information

long enough that people are doing the work for us before we have to, so we can then focus on the next set. It just almost sets an idea of a more adversarial role.

And I'm not saying that you shouldn't point out, this is wrong and we don't agree with it, but to come out and say this would be an example of an AA that's done incorrectly, it sets up a very different sort of mindset of people who are dealing, whereas if you say here is -- here's ways it's better, because I also don't think you should say here is the world's most perfect AA that could exist because, I think Helen said it before, they never will be perfect. And so if you just say this would -- this would more meet our needs, you're better served. And you've almost -- you're almost set to have that bad example in the end.

Eventually, one day, assuming there is some person with an alternatives assessment that you just -- you get in actually under the regulation and you say, no, and they say, well, we're not going to amend this, you know, so you've got -- here's our preliminary, no, change it, okay, well, we changed it, it's even worse,

and you end up having to actually regulate that person's product and say, no, you didn't come up with a good alternative, so you can't sell it.

So I think you've got your built-in bad example, in a way, that will be -- that will be met by regulation, instead of -- instead of you having to spend the time looking for it and then creating this mentality of, oh, they're looking for bad people.

MR. PALMER: I'm just going to add that what I forgot earlier this morning was that point is that the regulations are set up that we have two stages in the process, and the first stage is really more of a screening, looking at which factors are considered relevant factors in our Work Plan for the next phases. So it's our hope and expectation that we're going to have that discussion, so people don't go off in the wrong direction down a rabbit hole for whatever -- either because they don't know how to do it or they have some -- the wrong idea of how to get there, so hopefully that will help.

CO-CHAIR MORAN: Thank you. I think we fully considered that.

So moving on to the last topic on the

list from this morning, decision making. What would justification for decision making look like? You know, a lot of thoughts. We're very -- several people mentioned that. And I'm wondering if somebody wants to tackle that first? I think Helen mentioned that. Ken mentioned that.

Thank you, Ken.

MR. GEISER: I can't start. I think the biggest thing was transparency, was how the decision gets made? So the thing I would be looking for in an alternatives assessment is -- was it -- assessing all the things that have been done to this section the alternatives assessment. How did you make the decision, then, that this -- there is either no alternatives or these are the two alternatives that could be substituted?

And, you know, we can go beyond that to think about, okay, immediately getting into decision theory, like Ann and others have suggested in starting it. And it seems to me at least, you know, the criteria upon which the decision was made, what was weighted heavier than other things in thinking about it, why the weights were the way they were, it seems to me,

that should be transparent, as well.

I don't know whether you have to go to all the extent of really making it some kind of mechanistic decision that, you know, filters everything, but I'd like to hear Ann on that one, but at least transparency and stating the values upon which the decision is made, that's a start.

MS. HOLDER: So, of course, one of the big findings of the Academy's panel was that ultimately these are value judgments; right? And so that's why it's emphasized at the beginning, before you start the process, to articulate your values of your organization because you don't want to actually be back-casting after you have the data. You're going to have a -- you're going to have a much better process if you will have set that up front. And all organizations already have their values; it's really just a matter of articulating what those are.

And sometimes it can be really complicated, especially like say that you're in CDP and, you know, you're really measuring yourself and carbon footprint and so on, how do you weigh that against your chemical footprint as an organization, especially if you're a large

organization? It's like how do you weigh those things together? You really need to have thought about that before you begin. And again, that's really emphasized in the framework for exactly this reason. So if you do that up front, then when you get to the end, you have to live by it.

And it actually can be fairly brief in our experience. It's about -- the conclusion part is actually relatively brief. It's about a paragraph or two that says, in light of all of this, you know, analysis that we've done we see that this alternative is better than the original on the primary area of concern that came from the Department, has these other trade-offs, but we think they're manageable in this or that way. That's an example of kind of something that we might say, articulate.

I try to keep it short because a lot of times, we are trying to make these cases to executives and other decision makers who don't have all the background. But a few of those actually can be very helpful, a few examples. And I you can, you know, again, encourage people for brevity on that, because it's very easy to start to blow it up into a 100 pages of

justification, which, if they've already done all the work, they shouldn't have to do that. You should be able to have a fairly concise logic, here are our values, here's our analysis, here's our conclusion, here's the decision, that really is a paragraph.

CO-CHAIR MORAN: So before we go to Elaine, I did want to ask the Department, in the packages that you're putting together for these chemicals, you're laying out some reasons, right, some policy, priorities and context for the Department's decision making; right? If you can just briefly explain that.

DR. WILLIAMS: I don't think there's that much policy, per se. We tie very closely to the regs. So while, for instance, in the Work Plan, we say we have a policy priority around children, when it comes to our regarding document, we would be more likely to point to where it is in the regulation that children as a vulnerable population, a sensitive subpopulation, are addressed.

So our documentation is really about the potential for exposure and the hazard endpoints, and just it's very focused on those two things,

so it's not constructed to kind of look at the breadth and set up that breadth of discussion that is required under the AA process.

So they are a little different and it's a good starting point, but it's not going to be adequate.

CO-CHAIR MORAN: Is there anything that you think that it would be likely that companies would grab on to support their decision making that gets put together in your package so when the -- okay. Yeah.

DR. WILLIAMS: A lot. Yeah.

CO-CHAIR MORAN: A lot. So that's actually something -- is that clearly placed or supported? I mean, so basically that's something that would plan to any decision examples that -- or decision-making guidance that you might want to put is -- because this decision is different than a typical AA.

So Helen was talking about an AA where it's a company. The company has got it's values figured out, and then it's making a decision, weighing the options against the company values and explaining that clearly.

Now here there's a set of company values,

and then there's a set of state values that might not be identical.

MR. PALMER: Right. And one thing that our profile docs, supporting documents for moving forward, might not have as thorough an assessment of all the alternatives.

CO-CHAIR MORAN: Of course not.

MR. PALMER: So, you know, there's going to be a lot of dialogue there we expect, we hope. But, yeah, they're pretty well supported, I think, in terms of meeting the basic criteria of the regarding.

CO-CHAIR MORAN: And I'm going to let Helen pick this up before we go to Elaine.

MS. HOLDER: Yeah, just to close the loop on this.

We were really very mindful of the fact that agencies have values. Regulators have values. Governments have values. And you have the same obligation to the responsible entities that they do to themselves about articulating your values, because that's how you'll be evaluating them. Just reiterating your point, so you don't -- you're not expected to or you shouldn't expect yourselves to not have a point

of view. You do and you should, and you just need to be clear to those who are regulating.

DR. WILLIAMS: And we're trying to do that.

MS. HOLDER: Right.

DR. WILLIAMS: I mean, if you look at our Work Plan, we were very explicit about where our policy priorities are. Sorry.

CO-CHAIR MORAN: Thanks for waiting, Elaine.

MS. COHEN HUBEL: So I appreciated the brevity and the focus on the decision, the option, and we can manage this and here we go.

So I think that's where sometimes things get muddled is when all the -- so when I was reading some of that alternative assessments, I mean just, I guess, in terms of what didn't work, it's -- when you start -- when you go back to all the uncertainties and unknowns, so -- and where I don't think that's necessarily something you should be revisiting again in the decision; right? So you've laid that out; right? You've already laid out what were the uncertainties, what were the major gaps? And I think the only thing that you -- you know, if there's really

some critical piece of information or some missing thing that you would need to finalize a decision, then, you know, I suppose that would be brought into the decision.

But I think that's where -- and maybe that's just -- maybe that's just something governments do, but -- or scientists do or whatever, but I think that that's where -- that's where sometimes these decision -- people start going into the need for the multi criteria and this, and blah, blah, blah, blah, blah, and all this other stuff, and you can do all that. I mean, if you have your values and you have your criteria, you can make a decision.

So I guess that's just throwing it out there, that some of these examples brought all that uncertainty into their conclusion, and that's where I think things get lost.

CO-CHAIR MORAN: Jack, go ahead.

MR. LINARD: You know, to Ken's point on transparency, though, I think DTSC must be prepared to respond to a company which claims certain aspects of an AA to be confidential. For example, if a company wants to switch out of a material but they don't have the manufacturing

capability to do it, and the manufacturing side of that is you don't want your competitors to know how much you can make or what you can make or what equipment you have.

So therefore, I think you need to be able to respond both to that company, you'll keep it transparent within that company and you, but how to respond to the general public, who's going to want to know, what are you hiding?

So I think you've got to have ways of expressing the fact, we're confident that this company has done its job. You know, there will come a time when that type of confidentiality comes into play. I don't think it will happen very often, but I know there are companies who have -- you know, their manufacturing, the scale of their equipment, the size, the identity of the equipment, that's all part of their proprietary knowledge. Maybe they've designed -- custom designed it for their own use, I don't know, but it's going to come at some point.

So I think if you're prepared on how you're going to manage that before it happens, I think you'll be in much better shape with that whole transparency dialogue.

MR. GEISER: Jack, can I just ask you, can you see that the decision should be fully transparent to DTSC, it's just rather that it's what is revealed publicly, or do you also think --

MR. LINARD: It's just -- it's both.

MR. GEISER: It's both?

MR. LINARD: I think between DTSC and the company, there's going to be -- because there are CBI protection laws. If they claim CBI and you agree that it is, I think, at least in the U.S., that's ironclad. I mean, you can have all the discussions you want. We are confident that it's going to be kept confidential. But also, how does the public know? You make your decision, but you don't quite divulge all the reasons for it.

So I think it's just how you manage that from -- it's almost a public relations-type issue more than anything. But you -- I think, be prepared for it. It's within the regs that you can do that. I just think, you know, until it happens, you know, don't let it come as a surprise and, oops, now what do we do?

CO-CHAIR MORAN: And so some extent,

you've answered your question with the public relations part.

MR. LINARD: Yeah.

CO-CHAIR MORAN: Yeah.

So, Julie, you're next.

MS. SCHOENUNG: I want to go back to a couple of things that have been said, and maybe change to a slightly different topic. But when Ken started with the key is transparency, the other thing that really revolves around transparency is raising the issue of data gaps and uncertainty analysis. And it came up, Elaine brought up, also, uncertainty, it's come up several time, but we didn't pull it out as a topic for today.

But -- so I just was looking back at the guidance document and there's actually a separate chapter on uncertainty. So I'm wondering if as you continue to look at these 13 examples or the 58 examples or whatever examples you choose to continue to evaluate to share with stakeholders, you might want a separate column that really addresses whether or not it has adequately addressed data gaps and uncertainty in the context of your guidance and your regulations.

And those two are talking to each other with nods, so I don't know if that was purposely not put in this chart for this first screen or -- but it seems to me that that's an element that is kind of embedded in other places and not addressed specifically.

MS. ZHOU: It was originally planned as a separate column to like match different chapters. But then we think about like for each topic area, actually, they have the different challenges on the data gaps. So when we do the template, we just ask the reviewers for each topic area to put one criteria to see whether they address the data gaps and uncertainties. So it's kind of embedded but not separate, but that could be different for how we want to put that information out and to be separate because it's so important issue. So that could be due later.

MS. SCHOENUNG: Yeah. Thanks.

CO-CHAIR MORAN: Julie has raised a really important point, because where data gaps and uncertainties really all boil down to is how to use that in your decision making.

And does anybody else have any other comments in this area in terms of DTSC's review

process or how that's transparently done in decision making? All right.

So we --

(Off mike colloquy.)

CO-CHAIR MORAN: Well, both of them. I mean, just the idea of where -- so Julie has raised this in the context of decision making. And although it plays out in each separate part of the AA, it's how those data gaps and uncertainties are handled in the decision making that's the bottom line.

MS. COHEN HUBEL: So, you know, I would just say one thing. I still think there's a distinction between the information that goes into making the decision and the decision.

So -- but I do think that, to Julie's point, there's the gaps and uncertainties identified along the way, but which of those across the board sort of rise to the top is something that will inform the decision hugely; right? I mean, it really should or could. And so it almost needs to be its own, you know, paragraph or piece of the assessment where you're kind of just speaking. Because, I mean, that's part of what happens, certainly in risk

assessment, but in any of these kinds of assessments is your assessment is only as good as your weakest piece; right? But I do -- I do see -- still see huge value in keeping that separate from the decision, but I do think you have to -- the good -- the good assessments pull that out and then sort of make those notes about which thing is driving your conclusions.

CO-CHAIR MORAN: Ken?

MR. GEISER: Yeah. I think it just follows what Elaine is saying, which is that you could see situations where basically an alternative has so little science on it, so little study of it, that basically the decision is based on the fact that there's not enough information. In fact, that's probably not an uncommon statement. You know, it looks like this might be a reasonable alternative.

But when we went to look for information, there are no studies, so we have no idea, so -- and we looked at this and we looked at that. And we have found three crude little studies. And we simply don't want to risk changing out a chemical based on such limited data, therefore, we don't accept this as an alternative. And that would

be, it seems to me, a logic -- first of all, you'd want to see that. But you could understand why that -- the lack of -- the data gaps are a bigger enough issue that you would actually discount an alternative.

CO-CHAIR MORAN: Basically, what you're suggesting is that there be explicit discussion of how uncertainties played into the decision making? Okay. So there's -- data gaps and uncertainties need to be handled, as Elaine correctly pointed out, you know, clarified throughout the AA. But in the decision making, Ken, you're just saying the very simple truth, that that be explicitly part of the decision making and transparent?

Mike?

MR. CARINGELLO: I just wanted -- so with that, because there's two versions of data gaps. And we're talking about if there's actually a gap of data, that the data doesn't exist, not that someone didn't report it in their AA, like we were talking about earlier, that there were gaps in some of those because they didn't meet the requirement. But for those cases where there's a genuine gap in data, it just doesn't exist, way

back when in the regulation, you know, part of -- as this was promulgated, the decision was made, we don't want to force people to generate data to do this. It's not about, oh, go and do all these studies in order to do this. So there was -- there had to be an expectation that there will be data gaps.

And I think that, as Ken is saying, absolutely what you have to do is you have to factor that in. You have to say I know there's a data gap here, I can't fill it, so because of this data gap, maybe I can't use this, but maybe it's just one piece of data. I mean, maybe we are missing the aquatic tox and we can estimate it somehow. We don't have real data, but we can do an estimate.

And you have to have that transparent discussion around the data gap and, you know, that the product you were using has a very bad score there. You can't prove this is better, but you can guess that it's better. And all these other characteristics are better, as well, so it becomes a good alternative, or that one thing was the one thing that DTSC was really focused on, this is a problem because of this, and this

alternative, there's no data to support it being better. Maybe that's part of your rationale, to say this wasn't a viable alternative at this time, until data exists. Because there's nothing that says two years down the line you can't come back and say, oh, DTSC, I've redone my alternatives assessment, I went and did the data and now I have it and, yes, this is better, so we're going to change our mind.

CO-CHAIR MORAN: So not seeing other folks here. So we've now exhausted the list of topics that we were going to talk about. We have 20 minutes left here. There's a couple things we can do.

One thing I'm going to suggest we do is give an opportunity for folks to make comments on other areas that aren't within the set of questions that we're going to address in the last section.

So just as a reminder, and I don't know if someone can get those up on the screen, I think there's a slide for this, in the last section of discussion after the break, we'll be talking about the specific set of questions that are in your background document on the bottom of

the first page, so there's three bullets at the bottom of DTSC feedback and two on communications with stakeholders. So it starts with, "Are there any indications we need certain expertise," on down, and the last three bullets on the screen here, and then the two more about communications with stakeholders around AA examples.

So if there's comments that you want to make on topics other than these, now is your big chance.

And I see Ken chomping at the bit, so you're first.

MR. GEISER: Well, this just comes from the work that I'm trying to do elsewhere, but -- and I've been sitting here most of the day trying to figure out how it's relevant to this, but it somehow just seems -- I just wanted to throw it out there and see if anybody nibbles at it, which is the whole problem of mixtures and complex interactions in the environment, and complex interactions in media and things where things are changing.

And, you know, we have this idea that here's a chemical we want to get rid of and here's a chemical that we think we'd like, and

these -- you could drop this one in there and it would -- and you can look at the two chemicals, but are you looking at the way in which that chemical changes the matrix itself and has interactions and reactions and all? And to what degree all those other things that come along -- no chemical, even a supplier doesn't deliver a chemical just as a CAS number chemical. There's always other things along for the ride in there.

And what does that all mean to us? I mean, if we --- if we can say -- I mean, I'm just trying to think of how it's relevant, but if we can say that we know a chemical and its various preservatives and functional elements, sort of auxiliary elements, we know it well, but we have another chemical that we can look at but we don't know anything about all the other things that come when the supplier delivers that, and it may be a lot of contaminants because the only way we know that that's made is in really crude ways, I'm just -- does anyone else worry about this question of mixtures and biotransformations and dynamics of chemicals in the real world?

CO-CHAIR MORAN: Anybody want to take that on? So I'm seeing lots of yeses.

I would say, yes, and that this is actually the one area where I've seen the tools to try to address that is EPA OPPs. And I think the TSCA program also has been thinking a lot about degradates, and that's only one class of outcomes there. They're getting a lot of pressure to think about mixtures and interactions with other chemicals in the environment. And every time I'm involved in a comment letter that involves that, it gets the same response back, we have no methodology for doing this.

But I'm hoping Elaine has something to say because she's more into the science on this.

MS. COHEN HUBEL: Okay. And not even -- also background is under TSCA, too, is something that has to be grappled with. I mean, we, you know, we've been thinking about this more on the -- well, it's interesting. I have somebody in the division who's an exposure scientist who worries only about dose, so he's got it all statistically worked out that it doesn't matter, and he still has to explain to this me.

But on the, you know, on the biology, so aggregating on, you know, biology along pathways seems to be a potentially promising direction;

right? And especially across kind of multiple endpoints and things, when you start to see that, you know, some of the pathways are common, and some of the pathways are conserved across species.

And, you know, so I think there's a lot of opportunities there. I don't think those are things that we'll be implementing, you know, in this kind of a situation anytime very soon. But I do think there's a lot of power in that kind of approach because, otherwise, you know, on an exposure side in terms of what's -- you know, co-exposures, I think people are definitely doing that sort of in terms of classes of compounds. And I'm sure that that is something that can and should be raised in these alternative assessments. But once you start moving to let's consider all endocrine disrupters, it's not going to be tenable at this time.

That's the one thought I have on that.

CO-CHAIR MORAN: Any other thoughts, or feel free to raise anything you want to say that's not going to address the last set of questions we'll talk about after the break?

Ann?

MS. BLAKE: Okay. So I've been sitting on this comment. But since Ken has been brave enough to throw something out there that he's worried about, this is one. I'm not sure how I would recommend this, but this is a question about decision heuristics and how much DTSC conveys when it starts to put its priority document together about this is what we're looking for, these are the challenges we've encountered in the past.

But then going back and looking at some of the examples, the one that was particularly good was the TV BPA. The EPA actually put in there, these are the kinds of things we're looking for. We're trying to meet performance X. These are the performance criteria and these are the problems we don't want to see in terms of human health and the environment.

And so bringing back Helen's comment about a company will put its values out, I think DTSC shouldn't be shy and, in fact, has not been shy about saying our duty is to protect human health and the environment.

And so the question that I'm sitting with is to what level of specificity do you have when

you present, we want alternatives with performance X to substitute for this chemical and product combination of concern? You know, where -- how far do you go in terms saying these are the things we should be thinking about?

So that's a question that I'm sitting with, but I see that it's useful to have some decision heuristics, I'm just not sure what level of guidance DTSC should bring into its -- you know, when it poses a product and chemical combination for an alternative. I mean, you've done this to some extent with methylene chloride when you said we want alternatives to methylene chloride and, oh, by the way, not this one because this is already a regrettable substitution.

So I think that's something that we'll maybe tackle as we go further on and deal with more chemical and product combinations, I think. How detailed do you want it? I mean, you've gotten much more specific in this Work Plan about the high-level criteria that you want to meet in terms of protecting children, water resources, the indoor environment and food. But then is there another level down for if we get another

specific chemical and product combination, do we want to go even deeper on priorities, like health -- human health and environmental priorities?

DR. WILLIAMS: Could I just say, that's something that the Panel could give us input on, whether they think we should.

CO-CHAIR MORAN: And I'll point out that there are also some criteria in the regs to inform DTSC's regulatory decisions that may be very helpful in terms of decision making under the AA. So the part I specifically recall is the preference for prevention over controls, so that's actually explicitly written into the regulations. There's a few values for the Department that are very clear there.

MS. BLAKE: Just to respond to that. So, yes, take all of that, but then in any application to an individual product or chemical combination, how detailed do the decision heuristics get? I think that's what we're going to have to struggle with.

CO-CHAIR MORAN: Okay. This is, again, your last chance to say anything about these topics or anything else that doesn't address

these last set of questions.

MS. COHEN HUBEL: Sorry. I'm talking a lot. Just throwing this out in terms of looking at goo examples versus not as good examples.

The issue of qualitative versus quantitative is sort of one that -- one of my pet peeves is that qualitative is okay. And I'm not sure I'm super comfortable. Like I think that -- so Michael gave examples where, you know, you don't have -- you have data gaps. What are you going to do to fill the data gap, or where are you going to build strength off of what little -- you know, there's knowledge, or somewhere there's knowledge. You know, there's can we read across? Can we, you know, do some kind of quantitative extrapolation? You know, what are you going to do to build strength off of something you do know and then say something about how good that is, that estimate is?

And I do think it's worth encouraging quantitative. You know, quantitative doesn't mean fully certain, fully knowable, but to just -- a lot of hand waving about, well, this is more than that and that's -- you can't then, when you get to that end and you start to pull

everything together and you start to weigh criteria against each other, if it's all a qualitative hand-waving act, it just becomes, I think, untenable. And that's when you can see the differences between the really good examples and the not so good examples, is where did they take that extra effort to say what do we know based on -- even if we know very little, what can we say about it?

CO-CHAIR MORAN: Okay, qualitative versus quantitative and trying to at least figure out, is it a gram, is it a million grams? You know, do we have some sense of that, yeah, putting bars, yeah, boundaries, that's exceptionally helpful in so many things.

So other thoughts? Anything anybody wants to say before we take a break? Okay.

I think we're all ready for a break. And so I suggest that we take that break. And I think the public schedule says we're taking a break until 3:30. Is that right? It doesn't happen to have --

DR. WILLIAMS: Again, the public does not have times.

CO-CHAIR MORAN: Oh, okay. Well, I think

we actually need until 3:30. I think we need a little break. Yeah. So let's take the break until 3:30, and then -- but we're going to start promptly at 3:30, okay? So everyone's rears/derrière in the chair at 3:30, and we'll be starting then.

Bye.

(Off the record at 3:06 p.m.)

(On the record at 3:32 p.m.)

CO-CHAIR MORAN: All right, I'm going to call the Green Ribbon Science Panel back to order, so if everyone can either take their side conversations out of the room or decide that they're going to be quiet? That means you. No, I'm not going to name any names.

All right, so the last segment of today's discussion on AAs is to answer -- DTSC sent us some charge questions in the background memo for today's meeting. And there's a couple of groups that I'd like to try to handle by going around the room. And given the hour, maybe what we should do is do -- start with a once around. Maybe we can start with Jack, if he's okay with that, and go around the other way before we come back from this side.

So the latter three questions on this slide, and then there's two questions on communications, are what we're going to handle during this hour or so before we wrap up today. So do we need certain expertise to review the examples? How might DTSC cover the diversity of areas required, since it quite broad, and if you have thoughts on that? And what can DTSC do to facilitate development of example assessments to better address the California requirements? And other the recommendations for how the programs should follow up to this effort.

So I'm going to ask, starting with Jack, to go around. And feel free to pick up on prior ones, but then I'll offer an opportunity for a little interaction on that topic before we move to the second one about outreach and training to stakeholders on the AAs.

Jack, thanks.

MR. LINARD: Do you need certain expertise? I think it's going to be case dependent. You've got a lot of expertise in-house now. And if it's just a simple chemical substitution that somebody is proposing, you may -- probably don't need much more. But if

you're talking, and my area is personal care products, and you need a microbiologist to comment on your preservation studies, you may need to bring in a microbiologist. So I think it's going to depend on the particular product and the case study that you've going on.

What can you do to facilitate the development of example assessments? Again, I think you do this incredibly well. You're always pointing back to the regs to say here's what the regulations require to do to, and you fall back on those. I think there's enough leeway in those regulations that you can almost comment, but you will fall back onto the A to M requirements. They need to address those. So I really don't think you have much to do in that area.

And recommendations on how to follow up on this effort, again, Ken mentioned it, transparency. Make sure everybody recognizes what you're doing, how you're doing and why you're doing it. I think that will serve you really well.

I would say one of the things that as one of the potential companies looking to do an AA, I won't say maybe looking forward to it, but we

might have to do it at some point in the future, continuously letting industry suppliers know what you want out of an AA. You know, even these AA assessments that have been done, some of them were done a long time ago. They might have been state-of-the-art back then, but things have advanced. You know, what you see that you would like that weren't -- that was not provided in those, be, you know, be transparent with what are the things you would like to see, in addition to what was reported on in those, or what other information you would like to have companies give you in order to do it better.

So again, I think you're on the right track. But, yeah, you will need help on occasion, and I think it's up to you to identify that. If not the companies will -- are going to inundate you with things that you won't understand.

MR. GEISER: Good response from Jack, I thought. I agree that I don't know how much expert advise you need. I mean, it looks to me like your team has done a good job on this. And, you know, there may be some specific things, but I didn't see -- I mean, I can think of things, a

lot of things, but I don't know what's on the team. But -- so it's like I just think you can do a lot of stuff in-house, but that would be my response.

So, I mean, the whole program is how to develop examples. I mean, they're not only going to be examples, they're going to be real alternatives assessments that are there. I guess you're asking, can we spur a few more? In fact, didn't the BizNGO want comments and example of trying to use the -- early on, trying to do a sort of a mock run of it to see what you've learned from that? I know that was useful, again, being my age I can say this, way back at the Toxics Use Reduction Program, we did -- we invited three or four firms to come in and do a TUR (phonetic) plan before we wrote the regulations, pretty much, or while we were writing the regulations, I guess, as a way to get some -- get people to really stumble their way through it. And we sat with them then and watched them do it, which was an interesting exercise. I don't know whether you can get volunteers to even try that. I don't know whether that's something that is of interest. I

think that's probably the driver, the motivation for that was probably to get the regs written in the most comfortable and effective ways for the firms, and now that's past, so that probably would not be a motivation.

But anything you could do to encourage some pilots that you could watch happen is kind of -- would be, I think, interesting.

On recommendations for this effort, I think, as I've said now twice and I'll say it a third time, I think one of the biggest benefits of this effort is the staff now knows these are some of the world's experts on these existing alternatives assessments and knows them well enough to be able to speak with authority and capacity and understanding about alternatives assessment. I think that's a big thing.

If you were going to do training on alternatives assessments or you were going to do advising alternatives assessments, it seems to me you have a compendium of examples of pretty good alternatives assessments that now have been curated into kind of what they're strong at and you could refer people to them. Oh, you're trying to do an alternatives assessment like

this? Well, here's two you should look at because they're good at what you're not doing well or whatever kind of thing. So it seems to me from a training and counseling point of view, they could be very valuable.

I would say, though, and this is a comment I make not fully understanding the whole strategy here, but it seems to me, I wouldn't -- I don't think this exercise needs to go on for years. It seems to me it's a thing that you've done and done well and maybe it's in its winding-down stage here. Because it seems to be phasing, I would encourage you to move on to some of the real-time, full-time actives at this point.

So that's my thoughts.

MS. COHEN HUBEL: Yeah. So I would agree, it was a useful exercise. And maybe there don't need to be a whole lot of follow-up efforts.

But on the point about facilitating development of examples, it would kind of be interesting to throw out, you know, I don't know, to your community of practice, academia or whatever, the idea of doing some DTSC-style assessment on retrospective, you know, decisions

that were made and how would they look differently under this model, versus the kind of just replacement that was done, you know, because there was some voluntary program or a particular chemical was banned and something else was replaced.

So it would just be kind of interesting to see how the process that would -- somebody would have to go through now proactively if that had been the case in the past. It would just give you something to benchmark against. And it would be an example that there's kind of nobody's not really much at stake because it was all done.

MS. HOLDER: So one thing that you could do to help facilitate these better, an example would be to take the stronger assessments that you identified and upgrade them to be compliant, because 80 percent of the work is done.

An alternative to that, if that's too much, would be a running commentary of how you would make that adjustment. But in the -- my recommendation would be the TV BPA one, because I do think that that is one of the stronger ones. And there is an ongoing need for that information.

It has some very interesting things that would be different under this assessment, in particular, looking at end of life, as Art was saying earlier today, how you might look at it from an occupational health view is actually quite different when you start looking at the full life cycle of it.

And so, again, most, a lot of the really important work is done, but this upgrade could be very helpful for maybe more complicated cases of articles or mixtures in the future, as well.

CO-CHAIR FONG: So on the first question about expertise, something that I am completely not good at but love to do anyways, Ken Geiser can tell you, is on economics. And so I think having -- and I understand, in fact, you do have expertise in-house, but I think that's an area that can always benefit from additional outside expertise. And the reason for that is because even if you get, let's say, expertise from a company to come in and help you with some internal cost, internal cost is really different from external public health cost. And developing expertise in those areas are not always the same.

So I think, again, when it comes to the

expertise, economics is, I think, is something that perhaps you can reconsider if you're comfortable with the expertise that you have in-house.

On the second question about facilitating development of example AAs, I think, in fact, this regulation is actually blazing the trail, encouraging the generation of AAs, so I think that's a really good thing. But if it's something that you guys are not already doing is to perhaps make connections to these centers for alternative assessment, safer substitutions that are springing up in different countries in Europe.

So I know, in fact, that Sweden is either in the process of considering or it will be announcing a center for alternative assessment or safer substitutions. And I know several other countries in Europe that are doing the same thing. So I think connecting with them would be a really good thing. And in meetings that I've been to related to, you know, those types of different centers, it's -- they always talk about what you guys are doing. So they know what you're doing and they're interested in how to --

what you're doing and how you can help them do a better job in terms of what they're doing. So I think connecting with some of those organizations would be a really great thing to do.

In terms of recommendations on following up on this effort, it's not really a recommendation of following up the effort, but I think a really good thing for DTSC to consider is to be more or get more involved, or be more active in scientific meetings, things like SOT, CTAC, where you can do, you know, scientific presentations. And I think that's going to generate a lot of discussions where experts in different areas of, you know, the different elements that you're doing will come up to you and recommend, provide insights into things that you guys are doing well or places that they think you can, you know, do it more.

So I think if you guys have the budget, I think scientific meetings would be a good place for you to really follow up on some of the excellent work that you're doing.

CO-CHAIR MORAN: All right. And as I pass this along, I heard something that we'll probably want to come up with on the research

agenda discussion tomorrow, the idea that there are some folks actually setting up centers that are going to look at AA, what kinds of research agenda items would DTSC have? So don't be afraid to think about stuff for tomorrow.

And next, Mike?

MR. CARINGELLO: So with the needing certain expertise, I think to answer that we have to go back to say what was the aim of this exercise? What were we looking at the examples for? And as I understand the exercise, I would say, no, there shouldn't have been any additional expertise than was used. Because what was happening was is take these examples and look, do they meet the requirements, how do they meet the requirements, and kind of score it without digging into the scientific models used, without saying, okay, we don't like this, it wouldn't meet our standards, we like this model, using it.

So I think that the right level of expertise was used for what the goals of this were. I mean, to have gone and looked for additional expertise would have simply been -- it would have changed it into a totally different exercise, which might not have been a -- might

not have been a bad thing, and I'm going to talk a little bit about. But I think that the right level of expertise was utilized. And I think a lot of it is in-house already, the expertise, that if you wanted to go deeper, you could. It's just, do you want to spend the time to do that?

I think that to facilitate the development of example assessments is where that hits, is you could do exactly what Helen is saying, is take these examples and beef them up and say if it didn't meet this particular need of our regulation, what would we do? And maybe not develop the data itself, but what would we need to do? I would say, if that's something that we think would add value, maybe go to the person who put that on the public domain and just make sure they're okay with that exercise, and make it a conversation with them and see what they marked out or anything. I mean, it is a public record. But to comment on it and leave the implication that it was insufficient would be unfair to them, so do communicate with them.

But I think if you branch it out, then you have the choices of do we leave it as just a model, an example of what I would do to make this

compliant and add these pieces? Or you have the option then to really bring in the experts here who are going to eventually be evaluating AAs that come in under the guidelines and have them say, what do you think of this model? Could someone use, you know, the EPA model to get us this information? And you could dig that deep in, if there would be value added to that. I don't know if there would or wouldn't. I don't know if you want to get into that with other agencies or other groups.

But I think that might be value added in a lot of ways, especially just giving the staff the opportunity to look in the AA as if they were evaluating it and one that they're not making up themselves. Okay, this came in. If we got this as a preliminary assessment, what would we have said? And there might be value to that.

And then -- so that would also be the recommendations I would say to at least consider, and then getting into the communications with stakeholders, I won't talk about that.

MR. NICAS: I have a little different take on errors or the kind of models used. I think that I don't really know the expertise of

the DTSC staff, so I'm just saying there needs to be expertise within the DTSC and within this program to actually be familiar with the kinds of point-of-use chemical exposure models that are -- that have been used and are currently used, because I think a lot of the products that were dealing with here involve point-of-use exposure. I mean, they're the kinds of exposures into the environment and I not the media. And I don't profess to know much about them at all, but they're very important. But I know that in terms of a lot of acute or high-level unit exposure, relatively high level, it will be point of use.

This is probably done already, but I think it's important that -- I mean, if I was handed a project or an AA and I didn't know anything about it, about sort of how the process ran exposure scenarios, the first thing I would do is call up someone and start talking with them, too, about, well, how does this scenario run? I mean, I would basically do some background information for myself without presuming that I could, just by myself, start plugging in and say, well, here's a model that I think fits and here are inputs that I think fit.

You know, you'd want to do your own kind of literature, something, at least a low-level literature review and talk to people who would inform you.

And I'm thinking actually about, you know, the spray polyurethane foam. You know, I don't really -- I mean, I know something about spray polyurethane foam, but I don't really know all the details of how it's applied. And therefore, because I don't know all the details of how it's applied, I don't really know what kind of model I would use or if there actually are very good exposure data that would inform decision making. Okay? So you'd basically want to consult people who know, use your own judgment, clearly, and know it's there.

I think that this is really not -- I don't know how (indiscernible) these questions. Like my teachers always told me and like I tell my students, I want to see your work. And so, actually, it sounds kind of silly. It doesn't really take any special expertise to make sure that input values that are inserted in the tables saying here's what we're using match the input values that are actually used in the equations.

And to actually see how the algebra in the equations gives you the final value, I mean, it's very -- it doesn't take a lot of work for the stakeholder to put that in, and it doesn't really take a lot of work to make sure that everything's internally consistent. I'm really big on internal consistency.

For point-of-use chemical exposure assessment, I had mentioned this before, I think it would be a good idea if they would be reviewed, at least informally, by the Occupational Health Branch of the California Department of Health. That said, I'm certain the staff of the OHB would agree that in theory it's a good idea, but I'm sure they would say they're very busy.

MS. SUTTON: So I think I'll echo Mark on that need for exposure science. And it sounds like the new hiring is covering some of that, so that's great.

And then even beyond this specific exercise, it sounds like, as soon as budgetarily possible, just hiring more staff will be important based on Director Lee's statement about moving more quickly in the future and really

picking up steam. So that's one comment to make.

And then I also wanted to reemphasize Art's comment about going to conferences because that's where I find some of my best ideas too.

MS. SCHOENUNG: Well, as we get farther down the list of people here who are echoing, I'll start by quickly echoing Mike and Helen and just that if you're going to continue to evaluate these examples, keeping track of what you liked, what you didn't like, what's there, what's missing in some formal way, not just the pluses. And, I mean, I'm guessing there's documentation behind all of that, so it's just a matter of you knowing where that is and how to use it effectively in deciding on guidance.

But as we talk about how to share the information with stakeholders, I mean, how do you take that information? And, Mike, your point is important. But if you're criticizing or noting omissions in certain ones in a publicly available document, to do that in an appropriate way.

The question of, you know, who else might be engaged to do an AA under the California requirements, I know you're familiar with BizNGO. And I'm on one of their workgroups when,

occasionally, their schedule matches and I can be on the phone calls. They do have one specifically targeted towards looking at AA. And they always talk about the California regs and are their AAs in compliance? Are they doing AAs that would work as examples for California? So I think they would be open to the idea of maybe one of their more contemporary -- you have one in here, but it's from 2013, you know, to really look at something that's more current to see if they're closer or if they'd be willing to entertain the possibility of trying to deal with relevant factors, for instance. Have they tried that and what would they do?

And lastly, I would echo what Ken said, and that is don't make this into a bigger exercise than it needs to be. I think as you actually get real AAs is going to be where the learning really comes. And so this should be a very focused effort and decide what the purpose of it is. If it's to provide examples to stakeholders, then that's the purpose, and how do you carry out that purpose? If it's to help DTSC figure out what they're going to see in AAs and how to guide firms of the future in actually

doing AAs, those are different goals. And so somewhere in this process, to clearly articulate what your goals are in reference to these examples, I think, is really important.

MS. BLAKE: Thank you. And thank you for starting at the other end of the table.

So echoing what Julie just said, deciding on what you want to do with this information, if you decide that this is something, either to keep track of how DTSC has done evaluations so far given the landscape of AAs that were not built for these regs, or if you want to convey what's currently available in terms of best in class for stakeholders that are going to submit AAs, I have a slightly different approach.

Helen and several others said take an existing one and upgrade one of these AAs. I would suggest cutting it another way, which is for each section, take the best in class that you see, because you do have a triple, right, a triple mark for every one of these source -- every one of these sectors that you evaluated. And just, you know, you can update that as you get better ones as you go along. But for now -- and then, you know, also do what several of us

have suggested and Julie just most recently suggested, just document why you decided that was the best potential answer.

There are obvious gaps because of things that are unique to these regs. So in the -- so I think what this is going to do, it's going to highlight places where you need more information. And one of them is, of course, places that are unique to these regs, including ID'ing relevant factors. So that's going to prioritize for you where you're going to need a little more guidance for the regs that are going to come in soon. And then I think that's also going to highlight gaps for methodologies that we've already discussed.

CO-CHAIR MORAN: All right. And I'll pick up with my own comments here. And not commenting on the talents of the staff, because there's a lot of really talented staff in the program, but just sort of generically, the skill sets that often aren't available in this area, one of them is ecotoxicology. Because I'm finding that that's an area where -- I talk to professionals in this field. They have a lot of expertise in human toxicology and some training in ecotoxicology, but not that much. And my

ecotoxicologist colleagues have a great depth of understanding and, I think, a lot to bring to this conversation. So that does feel like a gap.

I know exposure science is a broad field. A couple places that it seems to be particular important to have some expertise to access within that is on environment fate, particularly being able to look at chemicals and identify likely degradates and their potential fate and so forth, sort of walking through that and being able to think through the environmental fate and chemistry and compartments, not just sticking it in a fugacity model but, you know, really thinking through the available information that's there, and the chemical structure.

And the other one is environmental modeling. Mark has mentioned that. There's a broad array of environmental models and a lot of things that can be done really wrong with them. And so having a deep understanding of environmental modeling on the team, even if deep models aren't necessarily used, I think you're going to get a lot of AAs where you're going to get people going in and basically doing a risk assessment and they're going to use some canned

model, and they might use it totally wrong. And so I think if you don't have that modeling expertise on the team to do these reviews, things that are really wrong could look right, because I've seen that so many times. I mean, having the economics expertise, as Art mentioned, is just crucial for DTSC.

And another one that I've run into a lot is making sure to have the expertise on wastewater and urban runoff and solid waste management. These are specialized things, they're specialized areas of the regs. DTSC has a lot of expertise in hazardous waste management, but perhaps not so much in the solid waste chains, like CalRecycle does. And the wastewater and urban runoff and understanding all those pathways, those are such frequent gaps in AAs that I want to call that out.

This is PhD-level work, or work for scientists with a lot of experience and not necessarily a PhD. This is not entry-level work. And that's -- I want to really put that on the record because I think that's going to be important for DTSC in its ability to get the positions with the pay scales that are going to

be necessary to attract the quality review that's going to be necessary to protect California and Californians.

One thing that could be helpful, particularly in the early ones, is to see if it's possible to get some assistance from experienced risk assessment reviewers, if not in actually doing the review, in providing tips and tricks. There are common mistakes in risk assessments that are going to play out in AAs. Mark's modeling example is just so compelling to me because I've seen it so many times. And there's a number of other ones.

I know that EPA does a lot of risk assessment and a lot of review. And a lot -- there's other organizations, NGOs, as well as government organizations that do a lot of that. And you just see the same things over and over again, so that, those kinds of tips and tricks could be really helpful.

And then really using your networks, building those networks, and I just am thrilled that folks are mentioning scientific conferences. That builds expertise, but it also builds the networks to help ask specific questions quickly

during the review process, without necessarily revealing any CBI or anything else.

Let's see, so we spent a lot of time on that one.

Facilitating development, I think other folks have done a nice job there. And the one thing I want to add is that I think you all have identified some gaps in the available material. Xiaoying had this really great slide that had the gray areas on it showing there's not many examples there. And so it's just to at least consider getting some examples that just focus on that particular step. The problem formulation through relevant factor selection area is one we spent a lot of time on today and I know feels very mysterious to a lot of people.

You know, to me, it feels actually pretty straightforward, but getting a few examples on paper there might help make that feel more straightforward for everyone, so your gaps analysis probably could help you focus your effort. So instead of funding a whole AA, just fund that particular piece, perhaps done more than once, could be really helpful.

And then in terms of following up on this

effort, I think we've talked a bunch about explaining -- I would just echo the trying to explain how you'd get from an example not written from the regs that was strong in an area to something that -- what other work would be done to make it look like something that would fit within the regs, even if it's just qualitative and not a perfect description, I think would be very revealing for people.

So I think that's -- oh, in terms of meetings, in addition to scientific meetings, economic meetings and national and international, you know, really getting out there is going to be really, really important.

So does anyone else want to -- does anyone want to follow up on any of the things that have come up here, particular the folks at the beginning?

Go ahead, with the mike. Thanks.

MR. GEISER: I'd just say, it's set up very nicely for an academic journal article. I think it would be really useful to do an article. Not only is that a way to reach a lot of people in the field, but also it just would be good that DTSC were putting out journal articles, I think,

would be great. Because, I mean, there's a series of articles now on alternatives assessment that are being -- they're in risk assessment and several other journals, and I think it would be useful to follow this up.

By the way, I know there's been a little hint of this in some of the conversations. I understood the rule or the policy on doing this as to just know what was good in the reports and not talk about what was negative or not so good, I think that's really right. I wouldn't not urge you to go back and do critiques because that, I think Mike said it well, that sets up a very different feeling about what you're trying to do. You don't want to be blind to the fact that here's weaknesses, but you don't want to -- that's not what the mission of the task has been.

CO-CHAIR MORAN: Okay. So anybody else want to say anything? And as you're thinking about that and putting your flags up, I'll also second the journal article and point out that it is not uncommon, in fact, it is common that science-based regulatory programs do publish in journals and make that part of the staff's job. And how much -- how many resources you have to be

able to afford that is a little rough, I understand. But I think it's not just a professional benefit that you do off hours, it's actually something that is important for science-based regulatory programs to have the scientific strength to be able to publish.

So, Jack?

MR. LINARD: Yeah. I just want to complement DTSC on sponsoring the session at CTAC. Because CTAC is becoming much more influential, not only in the U.S. but around the world. I know our company sends us to CTAC NA, as well as CTAC Europe. It's becoming the place to see all the environmental toxicologists around the world and gain experience on what is best practice.

So I think it's a huge thing for you to be involved and to be publicized as to what your program is.

MR. GEISER: Just one other thing that comes to my mind, obviously. And I know that Joel Tickner is engaged with you in discussing the idea of doing some event later. It seems to me that this particular thing could be a very nice panel in that. There's this whole community

of practice and initiative that several of you are involved in. It seems to me, building this piece into that would be useful.

CO-CHAIR MORAN: All right. Why don't we move on to the next set of questions.

Is someone able to advance to the next -- oh, thank you very much. Thank you very much.

So here we're -- I'm thinking of starting with Mike and going around this way, just to be different, on the Panel recommendations for communications with stakeholders, so what aspects of DTSC's evaluation need to be conveyed to stakeholders? And what's the best means of presenting the findings?

Here, I think we're looking for various -- we've talked a little bit about communications methods. You're probably also thinking a little bit about training approaches and things like that.

Yes?

DR. WILLIAMS: All ideas are on the table.

CO-CHAIR MORAN: All ideas are on the table.

DR. WILLIAMS: From YouTube to --

CO-CHAIR MORAN: So means of conveyance, as well as information conveyed.

And, Mike, you're on first, and then we're going to go around to Art and around back.

MR. CARINGELLO: Okay. Yeah, I think, you know, so the word "need," it throws me a little. I mean, I don't think we need to do anything. I mean, we're not -- it's not incumbent on us, but I think there's value to sharing this to stakeholders in a lot of ways.

You know, to me, a lot of the aim right now could be how do we continue to teach people how to do AAs the way that's acceptable under the regulations so that they flow into DTSC and we say, oh, wow, this is perfect, we love it, you know, let's move on, and a lot more can be processed? So the more we can do up front to get to that point where people understand the requirements, because I think that is always going to be the hang-up, especially at this stage, is people don't know exactly what's needed.

So I think that there is a lot of value to convey this evaluation to stakeholders. And I really like Ann's idea of how to do it, of saying

here are different sections that really worked for us because we're -- then it's examples of what was good and what worked. And we're not saying that the rest was really good or the rest met our requirements, you can be very clear about that, but here's an example of a section that met a requirement.

So I think that there's value to conveying this. I think it could be conveyed in a very high-level form, like the chart. Because I think the chart was very useful in a lot of ways. If it needed to be sanitized or whatever, I don't know. But to let people know that there are alternatives assessments out there and they don't all meet our requirements, you know, that California requirements under this regulation are different than any alternative assessment done historically, you know, so don't think you can just take an old one and send it in.

So I think that, you know, if we had that chart that says these were all good, I mean, if we can keep it to that positive level, these are good and they met the requirements for what they were intended, but they didn't meet all the requirements, so that people know that that's

part of the focus. And I think something like that, and then the, okay, this didn't get three pluses, this got a plus because it didn't include this information, you know, just a high-level thing, that would be ideal to do online. You know, have it on the website, and then people have a reference as they go back and forth.

But then I think that, you know, things like the CTAC meeting, things like workshops, I think engaging people one-on-one where they can ask questions is always going to be the most effective way. I know it reaches a lot fewer people. You don't hit the broad audience. But if you can hit a big chunk of industry that's going to be submitting the AAs, it's going to be less problems going forward.

So I think the best means is, whenever possible, to -- and webinars seem to work. Okay, I don't know what your experience has been, but at least it's a lower cost for people from elsewhere in the country. I think you often don't get as much interaction because of that, but at least the information is there. So if you can get a large enough crowd to be interactive, and maybe you have plants in the audience, I

mean, whatever, you know, who will ask you said questions, you know, maybe, you know, Panel Members in disguise. But I think that is going to be the best means, is just to have it in a conversational, but do present it. It's been a lot of work. It's added a lot of value. And I think there's a good -- a lot of good reasons that it should be presented and available.

CO-CHAIR MORAN: Thank you, Mike.

I'm going to move on to Art. And just to remind us, we're focused on what aspects, what needs -- what information needs to be conveyed? And what are the best means for sharing that information?

CO-CHAIR FONG: So I'm actually a little bit confused, like I always am. When you say what aspect the information needs to be conveyed, that's not the same as what aspects of our evaluation? Are we talking about evaluations of the AA examples that we need to convey or just information in general?

DR. WILLIAMS: Examples. The AA examples.

CO-CHAIR FONG: Okay.

CO-CHAIR MORAN: However you want to do

it.

DR. WILLIAMS: (Off mike.)

(Indiscernible.)

CO-CHAIR MORAN: Yeah. Okay.

CO-CHAIR FONG: Okay.

CO-CHAIR MORAN: You can take that more broadly or not, depending. I've been broadening it.

CO-CHAIR FONG: Oh, I'll go.

CO-CHAIR MORAN: That's okay.

CO-CHAIR FONG: Well, I think the staff has done just an amazing job in terms of I don't know how you managed to find 58 AAs and narrow it down to 13. I think that's, and again, just an amazing job.

One comment I do have related to a suggestion that Ann made, and I think it's a really good one, where you pull out sections that were done, you know, extremely well that's related to the regulations, that's related to, say the Products Consumer Regulations, I think that's a really good thing to do.

But as I was thinking about that I was just -- you know, when I look at an AA, you know how one section is always related to and effects

how you process the second -- another section? So by pulling out different sections, unless you do it really well, I think that might actually confuse the reader if you don't do it well. So just something to keep in mind if, in fact, that's the direction you're going to go, to keep in mind that -- how the different sections are interrelated, so when you pull different sections out from different AAs, you need to really be aware of how to do it in such a way that it doesn't cause confusion.

In terms of, you know, again, presenting to stakeholders, I think, again, scientific conference is a good one. In terms of webinar, I think that's also really good. If there are things like if the Panel Members can be of help in terms of promoting the communication, please let us know. Because unless you're actually effected by the regulation, you may or may not be on your email distribution list.

So the question that I have, sitting on previous webinars, is that only people that are really interested in this are attending, but you're missing out on people that actually have expertise that can help the program do better.

So if the Panel Members can actually promote, you know, communication, please let us know.

CO-CHAIR MORAN: All right.

MS. HOLDER: Yeah, I think that the evaluations should be shared in some way. Examples are just so useful as a practitioner, completely. For all sorts of these types of assessments, seeing what worked and what didn't work can be helpful.

I would just say that as either an author or a contributor to more than one of these, I would actually be delighted to rework parts of it. And so it's sort of like, you know, so it doesn't offend me because when I was working on these, they weren't for this. It doesn't bother me at all if they say, well, it doesn't meet the requirement. I'm like, well, of course it doesn't. But, you know, if we could take something that's, again, 80 percent there, spend a couple weeks or a month or something kind of tweaking it so that it really is genuinely compliant with what you want, that's golden. That's absolutely very, very valuable. And if it were available online for people to look at as an example, that would be terrific.

CO-CHAIR FONG: Please, Helen, you're not allowed to leave the Panel ever.

MS. HOLDER: Okay.

CO-CHAIR FONG: You're the only one volunteering.

CO-CHAIR MORAN: Meredith reminded her that she knew she was being recorded.

So onto Elaine.

MS. COHEN HUBEL: So I'm not sure that I have a huge amount to add.

I think the one thing that strikes me is some kind of synthesis of what you've learned. And, you know, given sort of the stakeholders or the stakeholders, you know, so having the examples that are, you know, annotated in any way you decide to annotate them is, of course, I think really valuable.

But I'm wondering if just even like a fact sheet or fact sheets by module that sort of says something about here's what elements and practices we found to be really transferrable, and where we found things to be different, what's different, what's new, what, you know, what kinds of information would inform those modules, you know, that isn't out there? It would just, you

know, it would just synthesize it all in a, you know, quick little -- again, this is -- you've got some other fact sheets that one of your presenters early this morning talked about where, you know, this is not that people may be doing it, but the people directing the people that maybe are doing it.

So, oh, I know, for your guidance, right, you've got the fact sheet on the guidance. So this would be almost like the fact sheet on the examples and on the modules, and so it's just building out that whole -- those fact sheets.

MR. GEISER: Well, I think I've said most everything I have in mind, so the journal article I think is really a great way to get this out. And you've also now heard about webinars, and other people have suggested some really good things.

I guess the only other thing is, you know, to the degree that you're doing to do training, to incorporate this document or this into training. I continue to push the value of training. I just think it's really, really important.

So there's a wonderful quote that I

remember from W. Sumerset Maugham, and it was something like, "Having nothing to say, I decided to say nothing."

MR. LINARD: I won't comment after that one.

Communication, I think one of the things that we've been talking very specifically on the alternative assessment analysis that we've seen, but remember, it can be on different levels because you're going to have senior management at various companies wanting to know, where are we in the process? What is this all about when you rate somebody on how good their AA is? So I think you've got to have a general statement, more for the general public, I guess, companies that might be considered stakeholders, just to say this is part of the process. We're doing this. We have -- we're working with all of the appropriate stakeholders to evaluate it. And then you're going to have another one which actually is your one-on-one discussions with those stakeholders to develop the real AAs and make sure that they're as robust as you can possibly make them.

So I think you have to look at

communication on different levels because companies who may be involved in this, the senior management is going to read it and go, oh, my god, what are they up to now? And I think you can easily -- you can make that not an issue at all by just saying here's where we are in the process. Today we're issuing this, just those high-level notes, to say don't panic, don't worry, it's all under control. We're working within all the right people within your companies.

In terms of, Ann mentioned, section by section, one of the best ones, I think again, just to comment on how each one of those three stars meets those requirements, maybe reference the requirement and just say it meets it because it has this, these three elements or four or whatever. I just -- help explain that. I think that would go a long way toward eliminating any problems with the broken-up nature of combining different AAs in one.

And then lastly, Art's offer that we volunteer. I know from the East Coast side, I talk about what we're trying to do here in a very positive way. I talk about how DTSC is working

really hard to make sure they have open lines of communication with all parties. So I think, you know, use us. Even on a panel discussion at CTAC, maybe there's an opportunity for somebody to sort of represent our end of the bargain. So I think don't hesitate to call on us to do something.

CO-CHAIR MORAN: Over to Ann.

MS. BLAKE: So I don't have a handy-dandy Sumerset Maugham quote, so I will just echo some of the other things that have been said, but just to highlight them. I'm very much in favor of Elaine's idea of a synthesis, some sort of synthesis document. I don't know if that's the same as a high-level journal article, but you know, I think both of those have sort of synthesis aspects to them.

The best-in-class sections, yes, I can see that that would be a little confusing. But as my colleague here said to me, "That's what hyperlinks are for." So potentially you could put the best-in-class sections online, and then you could have a hyperlink to the entire AA so you have the context. I hope that's what you meant.

And then I would also echo what Mike

said, "How would you communicate to stakeholders in every way possible," which I think goes back to Jack's idea of, you know, who are you talking to in your stakeholder group and what level of information do they need?

MS. SCHOENUNG: I want to quickly go back and sort of retract a statement I made earlier about the fill-in-the-blanks document that you mentioned. I'm not sure exactly what you had in mind there, but I do think there's a value to here's your chapters in the -- here's the regs, here's the chapters in AA guides, here's what we see as an example that works for Chapter 2 and for Chapter 3 and for -- so that sort of checklist, especially given the regulatory aspect. It's not just an open-ended company AA going what's important to us and what do we want to look at? They really need to address certain things. I'll make that comment now.

And I wanted to also -- and Jack sort of alluded to, you know, who do you really think of as stakeholders for this particular exercise? I mean, clearly the people who you think are going to be doing AAs would be the first ones that come to mind, and I think that's what many of the

comments have been referring to.

But Jack alluded to that there's going to be different people out there who are going to see what you put out, and how do you make sure that it's framed in the right context to those different audiences? You know, your 3,000 people that are on your mailing list that do your survey, how are they -- you know, how would they see this? What are they going to see it as? Is it going to, again, scare them? Is it going to confuse them? So framing it a little bit to who your stakeholders are. So are you seeing that broad range of stakeholders for this exercise or are you trying to target this to specific guidance for those who might need to do an AA soon?

DR. WILLIAMS: That was not rhetorical?

MS. BLAKE: No.

DR. WILLIAMS: No. Our highest priority is the set of people who have to do these. That's the number one. We want to help people comply, so that's where we'd start.

MS. BLAKE: So it --

DR. WILLIAMS: And then I'd say the next here is those who are actively trying to build a

community of practice.

MS. BLAKE: So --

DR. WILLIAMS: Because the more people --

MS. BLAKE: -- they need to be specifically directed to that -- those audiences, I think, very clear who the audience is intended to be.

DR. WILLIAMS: Got it.

MS. SUTTON: So my comment about community with stakeholders is just to continue what you guys are already doing, which is repeatedly emphasizing how collaborative you are and how interested you are in listening to everyone and being thoughtful. As Mike mentioned, this has already been a really collaborative process. And anyone preparing an AA should know that they can reach out for help and advice and early guidance so they don't give you something that's not quite right.

MR. NICAS: As an alleged professional educator of graduate students, I no longer know what works best. So probably posting things online, and also webinars, are probably -- would be the most useful things to do.

And I think, actually, the good example

posting is a really good idea, although with the caveat that I would do an alternative posting for methylene chloride exposure.

CO-CHAIR MORAN: And I've just got a couple things. One is what aspects need to be covered? I'm going to slip in something I forgot to say last time, which is think that some of these standard tools and methods that were in that neat slide with the bubbles that Xiaoying showed, I just loved her slides, that identifying the gaps on those and how to fill and fix is a step that needs to somehow occur and be communicated. Because I do think an awful lot of people in the community of practice are just used to using GreenScreen or Safer Choice, and that doesn't fit here. And I think those tools are going to be improved, so maybe they will fit here.

And the other one is go to the -- go to your audience. Don't have them come to you. So webinars are good, but going to where they're already gathering is so much better. And that's my number one rule for government agency communication. This is actually one of the reasons I like science conferences and other

professional meetings, you go to where all these people are already gathered and you can learn a bunch, as well as give a presentation. And this, with some examples, some real details on strengths in particular, why this is strong, what can improve it, makes a really great presentation at a conference. So I would hope it could get presented at a whole lot of different settings, so I'll support that.

And, but again, say thank you to the staff.

So we'll give a chance for anybody who wants to fill in with anything else, starting with Helen.

MS. HOLDER: Since you had mentioned the tool gaps, I just wanted to reiterate, we've said this before, but we don't want anyone to be starting from scratch on developing a new tool because of a criticism of a tool. So please be very clear that this is how you augment or this is how you complement or this is how you extend, and don't just say all the tools suck. Because then they're going to go off and try and try and make tool number 19. We don't want that.

MR. GEISER: Just a quick thought. I

finally have something to say. A quick thought, and that is one of the things that I think was successful in my experiences when you present something like this, that you present -- that you have folks from the actually regulated community involved in the presentation and all, and it's not just DTSC staff. But, you know, I was thinking of you. Right. Right. But I think that, you know, there's a certain legitimacy to that and all that's really helpful.

CO-CHAIR MORAN: Great. Mike?

MR. CARINGELLO: Yeah. I just wanted, when Kelly was talking, I wanted to say, and you've done this in the past, but trade association meetings are a great place to do these presentations. The Society of Plastics Industry, you've been at in the past. Looking ahead tomorrow, they're probably going to be very interested. You know, I know they would probably make space at one of their meetings. And industry always seems to be very involved with that. I think trade associations like them, or CSPA, are very good avenues.

CO-CHAIR MORAN: And, Jack, you're on.

MR. LINARD: You've -- we've talked -- or

you've talked a lot about interactions with Europe, REACH, ECHA, et cetera. It would be important for the U.S. companies to know who you're talking to, just as part of the communication. I work for a European company. And it would help to know exactly who you're talking to so that I can convince my colleagues in Europe that what you're doing is the right thing to do. It just make it easier for us companies who have European arms to -- and most of us do, to be honest. And we're very diligently working REACH with ECHA, et cetera. So it's really important to make sure we know what you're -- the collaboration you're working with them, not -- we may not need all the details, just to know with whom and to whom, et cetera.

Just quickly, the other thing is we've talked a lot about EPA with reason, but my entire industry is actually regulated, not by EPA but FDA. And we -- I do watch EPA closely, but it's important to make sure that you touch base with some of the other parts of the world, too, which is FDA.

CO-CHAIR MORAN: And Consumer Product

Safety Center.

MR. LINARD: CPSC.

CO-CHAIR MORAN: Yeah, CPSC. All right.

So before we go to Meredith to talk about future meeting times and topics, I did want to check in and see if anybody else has any last thing they want to say?

To wrap this up, there is one thing I want to say, which is that what's happening here and what DTSC is doing is changing the way that people are looking at evaluating chemicals in their products, so it's already happened. We've heard some examples from our industry experts at the table. You can see that out in the larger community. So what's happening here is going to change thinking all over the place, so it's very, very important. And sharing this broadly, starting with those primary target audiences, but also broader target audiences, will keep chemicals from ever -- and products from ever coming up to this regulatory program, because it's really taking us a big step down the road towards safer products.

MS. COHEN HUBEL: I know you wanted to close, but you just triggered a thought in my

mind, and that is the emphasis on solutions versus problems. And I think that's becoming increasingly important when we're wanting people's ears to stay open and excited about things that are going on.

CO-CHAIR MORAN: Exactly. Emphasis on solutions is a great way to end.

And now I'll turn it over to Meredith..

DR. WILLIAMS: Thanks, Kelly.

So we wanted just to look forward a little bit. This meeting is already doing some of the things we talked about last time in terms of just kind of changing the direction and the focus of the Panel a little bit.

And I think when I looked into the next couple of meetings, there are going to be some topics that we're going to want to explore that are very near term and immediate. We will want to share with you the AA templates that we're developing and get your feedback on those things.

And then, as we talk about the research agenda tomorrow, there are going to be some topics that are very much further out. All the new approach methodologies that are coming online and how to use those in our decision making,

that's not going to happen tomorrow, but we need to think about it today.

So with that in mind, I mean, we have -- Anne Cooper and I actually tried to pull together the list of our topics that we've gathered over the last couple years. And it turned out that there are a lot, and so we have quite a parking lot of topics. I'm just going to -- I'm going to highlight a couple that came up today, and just to remind folks that these are the things that I think the Panel will definitely look into.

One is, of course, decision making. We actually thought about including decision making in our -- for this meeting but, of course, we didn't want to do it without Tim. We thought about patching Tim in for part of the discussion. And so I think that's going to be one that's very important.

I already mentioned the AA templates.

I have a personal challenge or passion or curiosity around the adaptation of traditional risk assessment frameworks for decision making under our regulations. And I really want this Panel to help us explore that issue, and so I'm hoping that we can queue that up in one of the

next few meetings.

Data gaps, identification of relevant factors, product function, uncertainty, they are just a lot of different -- a lot of different topics that I know the Panel will explore, so stay tuned for those.

But I do think in the near term the AA templates and the decision making, we'll probably discuss those sooner, rather than later.

And then in terms of timing, I just wanted to get a little bit of sense of people's schedules. I know it's -- you are all very -- we're lucky to get you at all, so getting any significant number of you is really a great, great feat, and I'm always happy when we're able to do that. But we're thinking of -- and don't shudder at the thought of Sacramento in the summer, but we're thinking about this summer, June and July.

And I know that's probably lousy for you, Ken. I don't know.

So I just wanted to at least get like just a quick show of hands of people who -- let's do it the easy way. If you know already that June is going to be a tough month, can you just

kind of raise a flag. Okay. Okay. And July? Yeah. Yeah. Wait.

UNIDENTIFIED FEMALE: (Off mike.) Half of June.

DR. WILLIAMS: Half of June?

UNIDENTIFIED FEMALE: The first half.

DR. WILLIAMS: The first half? Okay. And then July? Oh, July's not looking good. Okay.

And then I'm going -- so then I expect that August is going to be very tough for us and our staff. That's kind of off the table.

So I will just ask a quick question about September?

(Colloquy)

DR. WILLIAMS: I know. It's just you've got to go, yeah, okay, okay, before all the conferences start, pretty close after the -- after Labor Day.

(Colloquy)

MS. HOLDER: So not to knock the September idea, but if CTAC is going to be here in November anyway, is that going to make some sense to around that time?

DR. WILLIAMS: Well, quite frankly, we

are talking about doing an event with Joel Tickner, kind of in the front end --

MS. HOLDER: Okay.

DR. WILLIAMS: -- of CTAC. And do that and a Green Panel --

MS. HOLDER: Got it.

DR. WILLIAMS: -- is too much, too much for us. So it's a great idea, but we already stole it.

MS. HOLDER: Already taken.

UNIDENTIFIED MALE: We'd love to have you come.

DR. WILLIAMS: So, okay, so of course there are a number of Panel Members who are not here, so we're going to ask them the same question to get a sense of their availability. And that could shift whether or not September is a viable time for us. But I just wanted at least to get -- at least to narrow it down so we can start the lovely due-to-uphold (phonetic) process. Okay. So thank you.

CO-CHAIR FONG: Thank you, Dr. Williams.

We have listed the parking lot items on the slide that's being shown right now. Let me

ask the Panel if we're missing anything? Are there specific topics that you think is important that we did not include in either the parking lot or action items and what Dr. Williams just referred to?

MS. BLAKE: Did you want --

CO-CHAIR FONG: Yes, please.

MS. BLAKE: I think we've talked about things that DTSC needs to develop some guidance on, like ID development factors and things like that, but that's not something that needs input from the Panel. So if you're focusing on things in the parking lot that require Panel input, I just wanted to clarify that.

CO-CHAIR FONG: Yeah. Thank you.

Nothing else? Right. Absolutely.

CO-CHAIR MORAN: Okay. Is there an action item still specked there, too? It was just parking lot items; right? Oh, there it is. Okay. So here's two action items. I hope people like their names being up there. All right.

And so just to review where we were today, is it okay? Okay. Then -- so we had, I think, a very robust discussion on AA examples. We gave the Department feedback that their review

was generally on track, that there are some gaps in a few specific areas that we talked about, particularly exposure and ECOTOX, but they're not unusual. We raised a particular question on one in terms of selection, I think clarified that.

We discussed a bunch of specific items actually related to our little parking lot up there and developed a bunch of recommendations that are all going to be in the notes and the transcript and all the rest, so I'm not going to try to repeat those. And we gave the Department recommendations, so some feedback about expertise, what it needs on its team, you know, just some thinking about where it's going in developing its process for reviewing AAs, and how it's going to communicate what it learned so far with stakeholders.

So we accomplished a lot today. We covered a lot of ground. And there was a big pile of homework that was here. And for some people that was easier than others, because I think some folks on the Panel have read a lot of AAs already, and some folks, not so many. So that was -- Art and I and Meredith actually made a call about whether to include a lot or a few

examples, so we went with a lot. I think I got a little bit of feedback that don't expect us to read all that stuff all the time, and so we'll think about that next time, so that being the case.

But it does seem worthwhile to make sure that we're having -- when we have a discussion, that we have coverage of a lot of different areas, because we touched on a lot of different AAs over the course of our discussion, okay, so that part was interesting. Don't pile too much on us, but do that.

So we also did a lot of discussion of things that I think are going to fall into the research agenda discussion tomorrow where -- which we're doing at what would be lunchtime, and it only has 45 minutes assigned to it.

So one thing I'm going to suggest is that we might consider extending, depending on how long we spend on feedback on the Work Plan, that we not belabor that so that we can give ourselves a little more time on the research agenda if we need it. But what that means is tomorrow that we're going to want to be thinking through and being efficient in our comment making. So

there's a lot of things we could put on that research agenda, and so everybody should be thinking about the no more than three to four items, and any thoughts you have about overall priorities for the Department in the research area. I think that will help make our discussion more efficient.

And on the Work Plan, that's a pretty open and wide-ranging discussion. But again, you know, think about what are your priorities? You know, we do have a very broad mandate in terms of providing input to the Department in the Work Plan area. So you should not feel constrained in terms of what topics you cover, but do think about what are your priorities for raising in the public setting and for interaction with the rest of the group on it, because that's one of the best things we do as a group is putting something out there and letting other folks react and build on that.

So I think that's enough guidance for tomorrow. Does everyone feel fully prepared?

MS. HOLDER: A quick question. Are you suggesting that the session for Part 1 of Work

Plan be the entire Work Plan, and then give from 11 o'clock on to the research agenda?

CO-CHAIR MORAN: I'm suggesting that we'll see if we can finish the Work Plan a little faster, so I'm not sure where that divide would be. But I'm hearing a lot of energy in research agenda. I don't want to cut off the Work Plan discussion because this is our first opportunity to do that kind of thing and if it requires all of that time, we should use it. But -- and then that would mean we would not have as much time on research agenda. But hearing the amount of interest in energy and research topics, I'm thinking we would like to allot more time to that.

MS. HOLDER: I would support that, for what that's worth. I think that just the Part 1 on the Work Plan would probably be sufficient.

CO-CHAIR MORAN: Okay. Well, let's see how that unfolds tomorrow. So I don't want to cut anybody off, but
Jack has a question, and you can turn on your mike.

MR. LINARD: Do you want to start a little earlier tomorrow?

DR. WILLIAMS: And I don't know.

Karl, can we start earlier?

MR. PALMER: We've Noticed --

DR. WILLIAMS: Yeah.

MR. PALMER: -- the time.

DR. WILLIAMS: Yeah.

MR. PALMER: So I think we probably need to --

DR. WILLIAMS: That's our bad.

MR. PALMER: -- just start at that --

DR. WILLIAMS: Yeah.

MR. PALMER: -- at that time, just to ensure.

DR. WILLIAMS: Yeah. But if everybody could get here and we could start right smack on time, but we did today, and you guys are great that way, but --

CO-CHAIR MORAN: Yeah.

DR. WILLIAMS: -- at least we can take advantage of every minute we do have available.

CO-CHAIR MORAN: So I will ask for derrières in chairs right at 9:00. Art will be Chairing because he's more awake than I am in the morning. And there will be munchies again tomorrow, since we're going to meeting into what

might be the lunch hour for a lot of people. There will be munchies here again for the Panel Members. And do feel free to grab those munchies or bring some munchies of your own so that we can maintain our awakeness and efficiency through the end of our time tomorrow.

Is there anything else?

CO-CHAIR FONG: Dinner plans tonight.

CO-CHAIR MORAN: Okay. So after we adjourn officially, we can provide the information on the dinner and remind you all that we're not going to violate our Bagley-Keene obligations. However, we might socialize this evening and we'll be not talking about items on the agenda that may come before the group, and our interactions are more social in nature as we socialize.

And I do want very much to -- I know we'll thank the staff tomorrow, but there's a lot of tremendous work going into this program and it's just really exciting. And that we get to see the managers in front, but all of the staff members on the team have really contributed, including the Public Participation Specialist, Marcus and his team. The facility's folks, I'm

still thrilled about the mikes and all the rest. So all the way up and down, I feel very positive and super excited to have the opportunity to support this program. And looking forward to, with all of you, and thanks to the Panel Members, looking forward to doing more of that tomorrow, so thank you.

(The meeting of the Green Ribbon Science Panel concluded at 4:44 p.m.)

REPORTER'S CERTIFICATE

I do hereby certify that the testimony in the foregoing hearing was taken at the time and place therein stated; that the testimony of said witnesses were reported by me, a certified electronic court reporter and a disinterested person, and was under my supervision thereafter transcribed into typewriting.

And I further certify that I am not of counsel or attorney for either or any of the parties to said hearing nor in any way interested in the outcome of the cause named in said caption.

IN WITNESS WHEREOF, I have hereunto set my hand this 2nd day of March, 2018.

_____

Eduwiges Lastra
CER-915

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I certify that the foregoing is a correct transcript, to the best of my ability, from the electronic sound recording of the proceedings in the above-entitled matter.

March 2, 2018

MARTHA L. NELSON, CERT**367